HIGH SCHOOL INVOLVEMENT AND STUDENT ENGAGEMENT AS PROTECTIVE FACTORS FOR AT-RISK STUDENTS

by

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ABSTRACT

There continue to be a large number of at-risk students who do not complete high school every year. There are a number of identifiable risk factors that can contribute to an increased likelihood of students dropping out of high school. With advances in data collection, schools are now better able to identify and track students' progress towards graduation with detection systems, called Early Warning Systems (EWS). EWS utilize data on grades, behavior referrals, and attendance gathered from school records to identify students at increased risk for dropout. Students identified by schools as "at-risk" or "off-track" can then be provided with effective interventions designed to prevent dropout.

Student engagement is one variable that schools have the ability to measure and potentially increase through interventions. EWS can be used to help facilitate linking "at-risk" and "off-track" students, who potentially report low school engagement, to a school's preexisting intervention programs in order to prevent dropout. Furthermore, participation in extracurricular activities provided by the school may help make students feel more connected and engaged at school. This can be particularly important for students transitioning from middle school to high school. These transition programs, set up to help connect the incoming class with upper classmates, are a great way for students to acclimate to the high school setting.

With the different programs in place within a high school, it is important that

students are connected with the programs and services that are right for them to help facilitate engagement and connectedness to school. Ensuring engagement and connectedness to school can positively impact grades, attendance, and behavior, and also decrease the likelihood of dropping out. The current study aimed to confirm the model that participation in at-risk programs has a positive impact on student engagement, which in turn, positively impacts student outcomes, such as grades, attendance, and behavior. The study found that participation in at-risk programs did not necessarily improve school outcomes or student engagement; however, students within these programs who reported higher school engagement had better school outcomes.

This dissertation is dedicated to my amazing family who provided support and encouragement throughout my journey as a graduate student.

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CHAPTER 1

INTRODUCTION

Many school districts in the United States are continuing to take steps to positively impact graduation rates. This is in part due to legislation that places significant pressure on schools to increase their graduation rates and improve student outcomes. With more of an emphasis on outcomes, researchers have focused on using student outcome data to drive school policy and programs. However, even with significant gains in data-based decision making and improved policy and programs, there continue to be a number of students who disengage and leave school systems each year without earning a high school diploma or equivalent. The students who leave school are at a significant disadvantage compared to their peers who graduate from high school. The students who drop out are more likely to struggle to find employment, to be on public assistance, use drugs, be arrested, and spend time in prison (Dynarski & Gleason, 2002).

In order to continue to improve graduation rates, research needs to continue in many promising areas. One area of research that has gained momentum is the study of student engagement and how engagement impacts student outcomes. Student engagement is an exciting area for educational researchers because it is a variable that schools have the ability to measure and potentially change, and research has shown that lack of student engagement is a good predictor of dropping out (Betts et al., 2010; Finn, 1993). Appleton et al. (2006) conceptualized student engagement into four categories: academic,

behavioral, psychological, and cognitive. Another area with promising evidence is the use of Early Warning Systems (EWS) to gather up-to-date data on student risk factors, such as attendance, grades, and behavior referrals. The EWS framework helps to identify students who may be at risk for dropout and connect them with intervention programs and services.

The current study examined student engagement and participation in school-based intervention and prevention programs of students in grades 9-12 in a large suburban high school using an EWS framework. The study's main research questions were designed to determine whether the school's prevention and at-risk programs positively impacted cognitive and psychological engagement, which in turn would have an impact on the Early Warning Indicators (EWIs) of attendance, grades, and behavioral referrals. The study's main focus was to examine how school-based at-risk programs potentially act as a protective factor for student engagement. This is important because few studies have assessed the impact of at-risk programs on student engagement and EWIs while also evaluating the effectiveness of the EWS.

There were also secondary research aims. The participating high school implemented a universal transition program for the incoming 9th grade class at the start of the school year. The transition program, called Link Crew, used assigned peer mentors, who were 11th- and 12th-grade peers, to help provide support and insight to incoming 9th grade students. Since this is a newly implemented program, the previous year's 9th grade class did not have assigned peer mentors. To assess the impact of the transition program, the study compared EWIs and student engagement between the 9th-grade students and 10th-grade students (the previous year's 9th-graders). The study also assessed for any

improvement in EWIs and student engagement variables from January to May for both groups of students (9th- and 10th-graders). Since previous research has found that there are differences in dropout rates based on income, race/ethnicity, and other factors, the study also examined the influence of these demographic variables.

United States' Dropout Statistics and Trends

The federal law, No Child Left Behind Act (NCLB), instated in 2002, placed an increased importance on school accountability. This necessitated that schools pay closer attention to their graduation numbers, and make steps towards increasing the academic performance of their students (Swanson, 2004). This also paved the way for discussions on a number of issues, such as, how to measure academic achievement and ability; differentiating achievement and ability levels for more disadvantaged subgroups; how to measure graduation rate accountability; and how to best measure graduation rates (Swanson, 2004).

There are a number of ways to analyze graduation and dropout data. It is important to understand the difference between methods and how graduation and dropout rates are measured. One way the National Center for Educational Statistics (NCES) analyzes data is to use the averaged freshman graduate rate (AFGR), which takes the number of graduates in any given year divided by the estimated freshman enrollment 4 years previous (Aud et al., 2013; Chapman et al., 2011). There is also a similar method used to account for individuals who may transfer in or out of the school sample, called the adjusted cohort graduation rate (ACGR) (Stetser & Stillwell, 2014). Another estimate of graduation rate uses event dropout rate, which estimates the percentage of high school students who left school from the beginning of one school year to the beginning of the

next year without earning a diploma or alternative credential (Chapman et al., 2011). Status dropout rate is also used, which is the percentage of individuals within an age range who are not enrolled in school, and have not earned a high school diploma or alternative degree. Data can also be analyzed from the perspective of high school completion rates rather than dropout rates. Information regarding graduation and dropout rates is gathered using a number of data sources including, the Current Population Survey (CPS), the Common Core of Data (CCD), and the American Community Survey (ACS). These data are centralized on the ED*Facts* Collection System to help streamline data analysis at the state and district level in order to provide assistance and shape policy (Stetser & Stillwell, 2014). The different methods for analyzing graduation and dropout rates use a variety of information from the different databases (Chapman et al., 2011). It is important to understand the different graduation and dropout data collection and analysis methods in order to help clarify the statistics discussed throughout this paper.

For example, using AFGR to measure graduation rates, Aud and colleagues (2013) report that the graduation rate in the U.S. has steadily increased from an estimated 73.7% of students in the 1990-91 school year to 78.2% in the 2009-10 school year. To put that in perspective, 3.1 million public high school students graduated on time with a regular high school diploma during the 2009-10 school year (Aud et al., 2013). This number remained relatively stable in the 2010-11 school year with an ACGR of 79.0% and an ACGR of 80.0% in the 2011-2012 school year (Stetser & Stillwell, 2014). This increase in graduation rates occurred across races and socio-economic statuses (SES). The gap between graduation rates of students from high-income and low-income families has significantly decreased from 1970 to 2011. The largest narrowing of the gap occurred

within the last 20 years from a 21-percentage point difference in 1990 to an 11-percentage point difference in 2011 (Aud et al., 2013).

In 2009, there were an estimated 3 million status dropouts in the United States, which represents about 8.1% of the 38 million 16- through 24-year-olds living in the United States that year. It is important to note that much like previously stated dropout statistics, status dropouts have decreased from 14.6% in 1972 to 8.1% in 2009 (Chapman et al., 2011). The number of status dropouts decreased even further in 2012 to only 7% indicating continued improvement (U.S. Department of Education, National Center for Education Statistics, 2014). This downward trend is fairly consistent across race/ethnicities; however, for the Hispanic sample this decline did not occur until the 1990s (Chapman et al., 2011; U.S. Department of Education, National Center for Education Statistics, 2014). The status completion rate, which represents the number of 18- to 24-year-olds who are no longer enrolled in school, but do have a high school diploma or equivalent, also showed a positive upward trend of individuals earing a high school credential of 89.8% in 2009 (Chapman et al., 2011).

The graduation completion numbers have increased in part because of alternative education options. The alternative education movement gained momentum in the 1970s, and has helped to provide alternate pathways for students considered at-risk or in need of a different education model than the general student population (Stanley & Plucker, 2008). There are also alternative credential pathways that students can take if they have not completed high school, such as the General Education Development (GED). The GED has been around since 1942 and has continued to evolve with the secondary education curriculum. The GED test is highly accessible. For example, in 2012, 702,000

adults or 1.5% of individuals without a high school diploma took at least one GED test and 74.6% of individuals who took the exam for the first time passed (GED Testing Service, 2013). Although the GED does improve outcomes for high school noncompleters, it is important to note that individuals with a GED certificate often still do not fare as well as individuals with a traditional high school diploma (Chapman et al., 2011).

The NCES also reports graduation rates by race/ethnicity. For the 2011-12 school year, graduation rates using AFGR by race/ethnicity were as follows: Asian/Pacific Islanders (88.0%), Whites (86.0%), Hispanics (73.0%), American Indians/Alaska Natives (67.0%), and Blacks (69.0%) (Stetser & Stillwell, 2014). With the national average graduation rate around 80.0%, it is clear that minority status has an effect on graduation rate since the graduation rates of Hispanics, American Indians/Alaska Natives, and Blacks all fall below the national average. There are also statistical differences between genders. According to the 2011-12 data, female students' graduation rates are at 85.0%, which is about 7 percentage points higher than male students at 78.0% (Stetser & Stillwell, 2014). These data suggest that the public education system has not been entirely successful in supporting all students to graduate; however, there have been strides in decreasing differences in the graduation rate between students from different races and socio-economic statuses.

Event dropout rates have also trended downward since 1972 (6.1%); however, there was a brief spike between 1990 and 1995 when the rate began to increase again before trending back down to 3.4% from October 2008 to October 2009 (Chapman et al., 2011). There was no reported difference in dropout rates by gender from 1972 to 2009;

however, the years 1974, 1976, 1978, and 2000 all had higher event dropout rates among males. The event dropout rate was higher for Black (4.8%) and Hispanic (5.8%) students than White (2.4%) students in 2009. There were some interesting differences between races/ethnicities in regard to event dropout. Black students experienced a decline from 1972 to 1990, then increased from 1990 to 1995; however, after 1995 the rates have fluctuated with no measurable trend. Hispanic students had no measurable trend from 1972 to 1995, but event dropout rates declined from 1995 to 2009. Among White students, event dropout rates mirrored the overall population trends that were previously stated (Chapman et al., 2011).

Graduation and status dropout rates are also reported by state, and vary considerably. The status dropout rate across the U.S. averaged around 3.3% in the 2010-11 and 2011-12 school years (Stetser & Stillwell, 2014). The status dropout rates by state reveal a wide range with Alaska having the highest status dropout rate at 6.9% and New Hampshire having the lowest at 1.3%. Different conclusions can be made when examining the ACGR data from the 2011-12 school year by state, which suggests that the District of Columbia has the lowest graduation rate at 59.0%, and Iowa has one of the highest graduation rates at 89.0% (Stetser & Stillwell, 2014). The current study took place in Utah, which had a 76.0% graduation rate using ACGR in 2011-12 and a status dropout rate of 1.5% (Stetser & Stillwell, 2014). The data suggest that Utah is below the national average for graduation rates; however, Utah's status dropout rate is lower than the national average.

Overall, the literature suggests that graduation rates continue to increase while dropout rates are decreasing. This is a step in the right direction, but there are still a large

number of students who fall short of earning their diplomas every year. As previously stated, there are differences in graduation rates between race/ethnicities and income levels, but there are two other groups that consistently fall well below the national average and other disadvantaged groups. They are English Language Learners (ELL) and students with disabilities, with completion rates, using ACGR, at 59.0% and 61.0% respectively (Stetser & Stillwell, 2014). Schools need to identify ways to continue to increase their graduation rates, especially among minority and disadvantaged groups since a substantial gap in graduation rates persists between different races/ethnicities, income brackets, and other disadvantaged groups. All students should be able to obtain a high school diploma because without a high school degree or equivalent these individuals will be at a significant disadvantage, and at a higher risk for poorer life outcomes.

Negative Impact of Dropping Out

The issue of high school dropout has been referred to as a national crisis. Students who fail to complete high school are missing out on a major milestone in their educational careers, and subsequently fail to gain the economic and social advancement benefits that a high school diploma has to offer. The students who drop out of high school will be at a disadvantage, not only because they did not earn a diploma, but they are also less prepared for their future. It has been shown that these students may not work as many hours or earn as much money as high school graduates, which is only exacerbated by the growing economic trend to hire more educated workers. Individuals who have dropped out of high school are more likely to be on public assistance, use drugs, be arrested, and possibly spend time in prison (Dynarski & Gleason, 2002). To be more specific, the National Dropout Prevention Center/Network (2009) reports that high school

dropouts in the United States earn about $9,245 less every year than individuals who complete high school, and the unemployment rates are almost 13 points higher for high school dropouts. Furthermore, their average salary per year throughout their life is much lower than the average for high school graduates. In 2009, the average income for individuals aged 18 to 67 who did not complete high school was estimated to be around $25,000 (Chapman et al., 2011). To put the salary estimate in perspective, the salary of an individual who completed a GED certificate was estimated at $43,000, which is close to double that amount (Chapman et al., 2011). The significant wage gap for individuals without a high school education has been steady for more than 10 years (Aud et al., 2013).

As previously stated, unemployment is a significant problem for high school dropouts. The job market is particularly tough for individuals with less than a high school diploma, who often struggle to find employment compared to those who have a high school diploma and higher. In 2012, the employment rate for young adults aged 20-24 with a high school diploma was 64% compared to 48% for young adults without a high school diploma (Aud et al., 2013). The employment rate did not increase much for older individuals without a high school diploma: 56% for adults aged 25-34, and 53% for adults aged 25-64 (Aud et al., 2013). Of note, the employment rate was significantly lower for women with less than a high school completion across all of the age groups (Aud et al., 2013).

Aside from struggles to find employment, individuals who do not graduate from high school tend to be in poorer health than individuals who completed high school, regardless of income (Pleis, Ward, & Lucas, 2010). The health issues of high school

dropouts include higher rates of different types of reported body pains, migraines, diabetes, ulcers, kidney disease, liver disease, hearing trouble, vision trouble, absence of all natural teeth, and reported symptoms of anxiety and depression (Pleis et al., 2010). Furthermore, those who do not graduate from high school report more trouble with different types of physical activities, and have the lowest percentage of engagement in vigorous physical activity (Pleis et al., 2010). Also, considering their difficulties with employment obtainment and stability, these individuals are the least likely to have a regular place for medical care (Pleis et al., 2010).

High school dropouts are also at risk for a number of other factors that could significantly impact their quality of life. For example, individuals who have dropped out of high school are more likely to become teen parents (National Dropout Prevention Center/Network, 2009). Unfortunately, they are also at a much higher risk of being institutionalized or imprisoned. In 2009-2010, it is estimated that approximately 40% of 16- to 24-year-olds in the institutionalized population (including prison inmates) were high school dropouts (Aud et al., 2011).

Individuals who drop out of high school can also affect the United States' economic advancement. Education is an important factor in creating a well-educated workforce that can advance a nation's economy. This is especially critical with increased competition in global market places. Riggs, Carruthers, and Thorstensen (2002) estimated that high school dropouts potentially cost the United States $24 billion each year because of crime involvement, food stamps, housing assistance programs, and Temporary Assistance for Needy Families (TANF) benefits (as cited in Porowski et al., 2011). Another group of researchers, the Alliance for Excellent Education (2011), looked at the

potential economic benefits of decreasing dropout rates. These researchers hypothesize that cutting the dropout rate of a single high school by half would support nearly 54,000 new jobs and could increase gross domestic product (GDP) by as much as $9.6 billion. It is clear that high school dropout in the United States is a source of major financial loss. With the financial cost of dropout being so high, it is no wonder research in the field of dropout prevention and intervention is booming. The cost benefits from implementing effective programs are a major driving force in the research.

Theories Behind High School Dropout

It is clear that the impact of high school dropouts has negative outcomes for not only the individuals who drop out, but also for society as a whole. For this reason it is important to try to determine why students drop out and how to prevent dropping out; however, there are a number of different factors both proximal and distal that affect dropout (Rumberger, 2001). Due to the complexity of why students drop out, many researchers have posited theories to better explain and predict dropping out by looking at common themes and variables.

There are a number of theories and models for student dropout. For example, Finn (1989) proposed two different theories for why students drop out of high school: the Frustration-Self-Esteem and the Participation-Identification models. The Frustration-Self-Esteem model states that academic failure is the tipping point in a student's academic career that causes the student to either reject school and/or be rejected by the school. The student then internalizes the feelings of frustration and embarrassment from the school failure, and this creates an impaired self-view. The student views the school as being responsible for his/her failures by not providing engaging instruction and/or a healthy

learning environment in which the student felt emotionally supported. The student then acts out toward the school, which could take the form of skipping school, disrupting class, or other acts that could lead to a school discipline referral.

Finn's (1989) other theory, the Participation-Identification model, focuses on how students' school involvement or participation can impact their behavioral and emotional well-being, and in-turn impact school outcomes. Finn's (1989) model views school participation as an ongoing process. This model hypothesizes that participation in school-based activities increases the likelihood that a student will identify with the school and enjoy school. Therefore, the more they participate and enjoy school, the better outcomes for students and the more likely they will complete school. The opposite would then be true if a student was a nonparticipator; that student would then have poorer school performance and disengage from school, and the likelihood of that student not completing school would increase. Finn (1989) further goes on to state, "the ability to manipulate modes of participation poses promising avenues for further research as well as for intervention efforts." (p. 117). The idea that participation can be manipulated offers an avenue for school professionals and researchers to intervene and help students to become more involved and connected with school (Finn, 1989). The Participation-Identification model also posits that there are student factors that can impact student success such as skills, attitude, and behavior that are formulated prior to formal schooling. This will be discussed more in the *Risk Factors for Dropout* section.

Finn's (1989) theories, as well as those of other researchers (Newmann, 1992), set the stage for current research in the area of student engagement. For example, Rumberger (2001) identifies two additional frameworks for high school dropout: an individual

perspective and an institutional perspective. The individual perspective focuses on a student's values, attitudes, and behaviors, and how those attributes impact a student's decision to leave school. Again, this framework has an emphasis on student engagement and how over time, different variables affect a student's engagement in school, which then impacts the student's perspective and beliefs about school.

The institutional perspective takes into consideration a shift in the field of psychology away from focusing solely on the individual and thinking about individuals in terms of the contexts in which they live (Rumberger, 2001). This perspective considers family, school, community, peers, and demographic factors. Rumberger (2001) argues that a student's environment, namely family and community, has a strong influence on whether a student will drop out of school, but that many of the negative effects of a student's environment outside of school can be mediated by school factors. There are four types of school characteristics that have been shown to impact student performance: available resources, student composition, structural characteristics of the school, and a school's processes and practices (Rumberger, 2001). Of the four school characteristics, a school's processes and practices is the one characteristic that schools can easily modify. A school can aim to improve its overall effectiveness by shaping policies that help to keep students engaged and successful.

A common theme across these theories and frameworks is the importance of student engagement in preventing dropout, and the importance of considering not only student factors but also environmental factors. Student engagement theory is currently considered the primary model for understanding student dropout (Christenson et al., 2012). Furthermore, the early research on dropout prevention has led many researchers to

now focus more on a school completion perspective. From this perspective, interventions can be directed toward helping students gain the skills necessary to be successful in school and have the skills needed to prepare them for postsecondary success (Reschly & Christenson, 2012).

Student Engagement

Since Finn (1989) prosed the Frustration-Self-Esteem and the Participation-Identification models, there has been an increased research interest in student engagement due to (1) a need to better understand engagement in the scope of dropout prevention and intervention, (2) attempts to incorporate engagement into a general school reform model, and (3) expanding research on the role of motivation (Reschly & Christenson, 2012). However, research in all of these areas becomes complicated by differences in definitions of student engagement. One of the reasons for the differences in opinion is that educational and motivational research is studied within different academic fields, including educational psychology, which is more applied in focus, and developmental psychology, which is more theoretical. For example, there are researchers who view engagement along a continuum from high engagement to disengagement, and there are others who believe disengagement or disaffection should be treated as separate continua (Reschly & Christenson, 2012). There is also a debate on whether it is important to separate facilitator (context) and indicator (student) variables when studying student engagement (Reschly & Christenson, 2012). Due to these different perspectives, the definition of student engagement may be viewed as muddled and what exactly makes up the construct of student engagement remains in contention.

It is clear, however, that student engagement is an important area for continued

research. The reason researchers and policy makers continue to study student engagement is summed up nicely by Newman (1992), who states, "The most immediate and persisting issue for students and teachers is not low achievement, but student disengagement." (p. 2). This statement reiterates that student disengagement is a major concern to be addressed through intervention. As previously stated, however, student engagement has numerous definitions, which makes studying the construct challenging. What researchers agree on is that student engagement encompasses multiple factors and it is a complex phenomenon. For example, Balfanz, Herzog, and Mac Iver (2007) define student engagement as, "a higher order factor composed of correlated subfactors measuring different aspects of the process of detaching from school, disconnecting from its norms and expectations, reducing effort and involvement at school, and withdrawing from a commitment to school and to school completion." (p. 224). This definition reveals the complexities of student engagement, but also speaks to the importance of a student being engaged and being connected and committed to school. To define student engagement further, engagement represents a student's active involvement in school tasks or activities. Reeve and colleagues (2004) also state that engagement refers to a person's behavioral intensity and emotional quality while he or she is participating in a task. The emotional quality aspect of engagement is important to consider. When students or any individuals experience positive emotions it is believed that this helps them to expand their thoughts and behaviors more adaptively to their environments and cultivate continued well-being (Fredrickson, 1998, 2001). When individuals experience negative emotions it is believed to have the reverse effect, and decrease learning and adaptive thoughts and behaviors (Fredrickson, 2001). Therefore, positive emotions can lead to

increased coping skills and are correlated with success across contexts, including school (Fredrickson, 2001; Reschly et al., 2008). Student engagement can also be considered the binding agent of multiple contexts, including home, school, peers, and community (Reschly & Christensen, 2012). Fredricks and colleagues (2004) conceptualize engagement more as a metaconstruct that connects multiple areas of research and also subsumes motivation within the construct of engagement. Even though student engagement is multifaceted and complex, and the definition may not always be agreed upon, research is needed to continue to explore the avenues in which engagement can be measured and used to predict academic outcomes (Reeve et al., 2004).

As previously stated, there are many researchers with the perspective that student engagement is an important area of research in dropout prevention and intervention research. Finn (1989) first advocated for student engagement to be considered in dropout prevention research, and identified it as an important construct that needed further exploration. Many years after Finn (1989), Appleton, Christenson, Kim, and Reschly (2006) demonstrated that engagement could be altered through interventions. Another group of researchers, Fredricks, Blumenfeld, and Paris (2004), agreed with Appleton and Colleagues (2006) and provided evidence that engagement is malleable and responsive to contextual and environmental change. With this mindset, student engagement is a potential predictor of dropout, and school personnel can effectively intervene when student engagement is low. With continued research and support, student engagement continues to be at the forefront of research and reform in the field of dropout prevention.

As first stated by Finn (1989), engagement can be divided into two subtypes: behavioral and affective. Behavioral engagement is described as participating in class and

school, and affective engagement is described as identifying with school, valuing learning, and belongingness. The literature continues to expand and so has the theoretical model of engagement. Recent reviews of literature propose that engagement has three subtypes; a third cognitive subtype has been added to the original behavioral and affective subtypes. The cognitive engagement subtype includes self-regulation, setting goals for learning, and being invested in one's education (Fredricks et al., 2004).

Most recently, Appleton et al. (2006), prominent researchers in the field of student engagement, have broken down engagement into a measurable multifaceted taxonomy encompassing academic, psychological, behavioral, and cognitive components. They based their model on previous theoretical engagement models and 13 years of intervention research in the schools using *Check and Connect* (Christenson, Stout, & Pohl, 2012). The Appleton et al. (2006) model is set up not only to measure student engagement based on the four factors, but also to better understand goodness-of-fit between the student, the student's environment, and factors that may impact learning.

Academic, behavioral, psychological, and cognitive factors include a number of indicators for each engagement subtype (Appleton et al., 2006). For example, academic engagement is comprised of the variables: homework completion, on-task rate, and credits toward graduation. In the Appleton et al. (2006) model, behavioral engagement encompasses the measureable variables: attendance, suspensions, classroom participation, and involvement in extracurricular activities. Cognitive engagement indicators are more internal in nature, and include self-regulation, being able to connect schoolwork to future goals, valuing learning, setting personal goals, and autonomy. Psychological engagement is also internal in nature, and includes feelings of belongingness or identification with

school and peers, and relationships with teachers and peers.

The four engagement factors (academic, behavior, cognitive, and psychological) in the Appleton et al. model (2006) can be affected by contexts such as school, community, peers, and/or family. For example, within the school context there are a number of variables that could impact engagement such as the school climate, mental health supports, instructional programs, learning activities, clear and appropriate classroom expectations, structure, and student-teacher relationships. Peers also have various ways of impacting a student's engagement. Peers can influence educational expectations, common interests and values about school, attendance, beliefs about academics, effort, and peer aspirations for learning (Appleton et al., 2006). Furthermore, family variables such as goals and expectations for one's children, supervision, educational resources in the home setting, and support for learning, have a major impact on engagement. The variables described within each context could be viewed as alterable predictors of dropout, and may act as protective factors for academic success and school completion (Reschly & Christenson, 2006). The multivariable taxonomy of contexts that influence the specific engagement domains sets up a useful framework to identify potential risk factors and areas for intervention (Appleton et al., 2006).

All of the domains of engagement are important to consider, but academic and behavioral engagement are the easiest to observe and measure (Appleton et al., 2006). Although difficult to measure, research continues to emerge that shows support for the cognitive and psychological domains of engagement. For example, a study done by Greene, Miller, Crowson, Duke, and Akey (2004) showed that students' perceptions about the classroom structure were important factors in motivation. Another important

finding was that students' perceptions of classwork being important for their future goals and success also affected their cognitive engagement. Greene and Miller (1996) also found that college students' perceived ability and learning goals correlated with the use of meaningful cognitive engagement as measured by reports of high levels of self-regulatory activities and higher use of meaningful study strategies. The study also found that higher levels of cognitive engagement increased academic achievement (Greene & Miller, 1996).

There are limitations in previous research in how cognitive and psychological engagement has been measured. For example, the same items on a measurement of engagement have been used to measure different subtypes of engagement, and subtypes of engagement have been analyzed separately without comparison to other subtypes. Furthermore, raters vary across studies, and studies that use observer report such as a teacher, are thought to be highly subjective (Appleton et al., 2006). The method of using informants other than the student is highly inferential and reports may vary by rater. In order to more reliably and validly measure the internal construct of engagement, student report is often preferred. The reason student self-report is considered more valid is that students have a better understanding of how their own contexts impact their experiences. Reschly and Christenson (2012) further suggest that students are able to accurately report on their own engagement and environments, and their perspective should be considered when choosing and implementing interventions.

In order to more accurately capture cognitive and psychological/affective engagement, Appleton and Christenson (2004) created a valid self-report measure called the Student Engagement Instrument (SEI). The SEI treats student engagement as an

outcome variable, which it is, but it is important to understand that student engagement is also a process and acts as a mediator variable for academic and behavior outcomes (Reschly & Christenson, 2006, 2012). The current study uses the SEI to measure student engagement; however, it is important to note that there are numerous student engagement measures. Fredricks and colleagues (2011) conducted a review of 21 student engagement instruments. These instruments differ in the source of the data (student, teacher, observation), what subtypes of engagement are measured, and whether general or more specific forms of engagement are assessed (Fredricks et al. 2011). Advances in measurement and construct clarification would help to focus and expand student engagement research.

There are still many areas of student engagement research that need to be expanded upon and clarified. For example, there is limited knowledge about the effectiveness of intervention outcomes. Engagement interventions include helping students to function better in their environments, changing curriculum and school structures, personalizing students' learning environments, and building relationships among students as well as between students and staff. With the variations in the focus of engagement interventions, it is important for future research to determine which interventions are the most effective, for which groups of students, and under what conditions. Furthermore, additional information about the optimal duration and intensity of interventions is needed. As the field of student engagement continues to expand, it will be important for researchers to work toward answering these questions (Reschly & Christenson, 2012).

Risk Factors for Dropout

There are a number of risk factors that potentially impact student disengagement and a student's ability to be successful in school. Gathering information about potential risk factors is important because it could help identify areas where a school or other community agency may be able to intervene.

To gain a better understanding of the research on dropout risk factors, Hammond et al. (2007) completed an extensive literature review spanning the years 1974-2002. To be included in the analysis, the studies had to directly analyze the data source, examine school dropout and/or high school graduation as the dependent variable, collect longitudinal data over a period of at least 2 years, examine a variety of predictor variables in different domains (individual, family, school, and/or community), use a multivariate statistical technique or model, and include a sample of 30 or more students classified as noncompleters. Of the 44 studies found, only 21 met the criteria to be included in the authors' analysis of at-risk variables. These studies used national data samples, community samples, and school district samples, and spanned different periods in time and diverse communities both in location (urban, rural, and suburban) and demographics (race/ethnicity, SES, and gender). In considering the data from the almost 30-year time period, Hammond et al. (2007) found 25 significant risk factors across eight different categories. The authors estimated that about 60% of the factors were considered individual factors and 40% were family factors. In addition to considering individual and family factors, similar to previous researchers, the authors further conceptualized these risk factors into four different domains: individual, family, school, and community (Rumberger, 2001). These domains encompass the many risk factors that can impact

students' school success, and provide researchers and practitioners with targeted areas in which to intervene. Risk factors rarely occur in isolation; therefore, it is important to consider all possible risk factors that could be impacting a student. The review found that there was not one single variable that could accurately predict dropout, but that prediction strength increased when multiple variables were considered (Hammond et al., 2007). Furthermore, the review aimed to better understand when each individual risk factor began impacting a student during their academic career (e.g., elementary school, middle school, and/or high school). Finally, the review stated that these risk factors do not usually have an immediate impact on student engagement, but rather a cumulative effect that builds over time (Hammond et al., 2007).

Hammond et al. (2007) found that the studies on prevention and dropout were lacking in the rigor of their evaluation of program effectiveness, and the studies collected little to no long-term data. This significantly limited the number of studies that met criteria for the U.S. Department of Education's *What Works Clearinghouse,* a group designed to review and compile data on best practices in dropout prevention and intervention.

From the results of the review, Hammond et al. (2007) concluded that there are a number of individual factors that put students at risk for dropout. First, a student's family background is a powerful predictor of student dropout. A student's family background has a profound impact on who students are as individuals. It is important to think about students in terms of their family background because previous studies have found that family factors were the single most important factor in school success; however, subsequent research has found that schools can act as protective factors to mediate family

background as a risk factor (Rumberger, 2001).

The individual/family characteristics that place a student at greater risk are low socioeconomic status; low parental education level, and/or occupation; and family structure (Rumberger, 2001). Hammond et al. (2007) also reported that a large number of siblings, frequent mobility, family conflict, and not living with both birth parents were potential risk factors for students.

Many of these risk factors do not occur in isolation. For example, Jerald (2006) stated that research has consistently shown that minority students and students living in poverty are more likely to drop out of school. Moreover, minority students may also be English Language Learners (ELL); having limited English proficiency is another potential risk factor for dropout (Jerald, 2006; Rumberger, 2001). Immigration status further places a student at risk for dropping out (Rumberger, 2001). ELLs have a number of challenges that potentially impact their education. First and foremost, ELLs need to learn to speak English, and write and read in English, and master English well enough to participate in different academic subjects needed for graduation (Gwynne, Stitziel Pareja, Ehrlich, & Allensworth, 2012). Another challenge for older ELL students is that until recently many school-based intervention programs for ELL students occurred primarily in elementary school settings, although there is now a push to meet the growing needs of ELL students in the middle and high school grades (Capps et. al., 2005). ELL students typically have lower academic grades, and earn fewer credits in their core classes than their non-ELL peers, placing them at an even greater risk of dropping out than other minority students (Chapman et al., 2011).

As previously stated, students from low-income families are also at an increased

risk for dropout. They are about two times more likely to drop out, at a dropout rate of 10%, than middle class families with a dropout rate of 5.2%, and almost 10 times more likely to drop out than students from high income families with a dropout rate of 1.6% (U.S. Department of Education, 2014). Families with high financial burdens may also be more likely to have a low commitment to education. For example, families may set low academic expectations for their child, have a sibling or siblings that have dropped out, show little engagement with the school, and have little to no conversations about school in the home (Hammond et al., 2007).

Another individual factor that also places a student at higher risk for not completing school is having a learning disability (Deshler et al., 2001). Students with learning disabilities struggle to achieve academically and these struggles continue to worsen as the content in classrooms becomes more academically complex, and schools struggle to accommodate and meet these students' individualized needs (Deshler et al., 2001). Furthermore, students with learning disabilities also tend to have an increased number of behavior problems compared to students without disabilities (Sabornie & deBettencourt, 2004). This combination of behavioral and academic problems places these students at a greater risk for not completing high school. Reschly and Christenson (2006) also examined student engagement differences, a well-researched variable that can impact high school dropout, of students with learning disabilities and emotional or behavior disorders. They found that individuals with learning disabilities and emotional or behavior disorders scored much lower on engagement measures than their average-achieving peers, which in turn increases their risk for dropping out. Additionally, individuals with a disability are more likely to have a combination of risk factors

compared to other students (Wagner et al., 2006).

Another individual risk factor that has a significant impact on dropout is taking on more adult responsibilities, such as having a high number of work hours or having a child while still attending school (Hammond et al., 2007). Although males are at a higher risk of dropout than females, teen pregnancy is a very strong risk factor for females, especially in the United States (Wilson et al., 2011). Perper, Peterson, and Manlove (2010) report that only around 50% of teen mothers in the United States receive a high school diploma by the age of 22.

A student's peer group also has a great influence on the student's potential risk for dropping out of high school. If one's peer group is high-risk, such as a gang and/or low achieving, a student could be engaging in high-risk behaviors that could place him/her at a higher risk for dropout (Hammond et al., 2007). Peer groups could also lead to having a poor attitude toward school. Students with early antisocial behaviors including violence, substance abuse, other criminal offenses, as well as early sexual experiences, are more at-risk for dropout (Hammond et al., 2007).

Poor academic performance is one of the most consistent variables that places a student at risk for dropout. It is one factor that has been found to have an early impact, as early as first grade (Alexander, Entwisle, & Kabbani, 2001), and one of the most frequently reported reasons why students leave school (Hammond et al., 2007). Grade retention, which is related to poor school performance, has been repeatedly shown to result in poor outcomes for students (Alexander et al., 2001; Rumberger, 2001). Retention at any grade can be detrimental, and grade retention has been shown to have an additive effect, in that the greater number of times a student is retained, the poorer the

outcomes (Alexander et al., 2001; Gleason & Dynarski, 2002).

Lack of school engagement can be manifested as poor attendance, lack of effort, no involvement in extracurricular activities, lack of commitment to school, and low academic expectations, all of which are significant risk factors. This is clearly demonstrated in the study completed by Finn and Rock (1997), which examined moderating and mediating variables of at-risk groups to see why some students were more academically successful within these groups. They found that after controlling for a number of variables (socioeconomic status, parent school, family structure, etc.) that teacher- and self-reported engagement were significantly correlated with better outcomes. This is an important finding because student engagement is a variable that has the potential to be alterable within the school environment, unlike a demographic variable such as socioeconomic status. For these reasons, monitoring student engagement provides a promising approach to intervention and prevention of dropout (Reschly & Christenson, 2006).

As previously noted, dropout should be viewed as a gradual process of many events and factors cumulating that can lead to a student withdrawing from school. Reschly and Christenson (2006) purport that this gradual dropout process can best be explained using theories of student engagement. A majority of risk factors have a significant impact on dropout in middle and high school; however, student performance variables, poor attendance, school behavior, and family background characteristics were found to significantly impact dropout as early as elementary school (Hammond et al., 2007). For example, a primary risk factor is school misconduct, which was found to be even more predictive of dropout when aggression and misconduct occurred at an early

age (Hammond et al., 2007). Another important time period when risk factors can significantly impact student outcomes, is the transition from middle school to high school. The 9th-grade year often sets the tone for a student's academic success, as well as success beyond high school. The National High School Center (2012, October) reports that more students fail 9th grade than any other grade, suggesting that it is very difficult for students to recover from a failed 9th-grade year.

The large number of risk factors that could potentially place a student at risk can make intervention efforts challenging. For this reason, it is important to know and understand the most prominent risk factors and how to identify them. The ability to monitor and track risk factors, including student engagement, can facilitate improved intervention efforts.

Early Warning Systems

With a multitude of risk factors having such a strong influence on dropout, it is important for school staff to be knowledgeable about potential risk factors and have a system in place to identify risk factors. An Early Warning System (EWS) helps school staff to regularly access student data to accurately identify risk factors, and target those students in need of specialized supports. This is made easier with new technological advances. Schools now have the capability to track and analyze student data through computer software and subsequently, can more easily identify students who may be at-risk for school dropout and in need of intervention or supports. An EWS uses technology to identify and track dropout-specific variables such as poor grades, low attendance, and behavior incidents (Davis et al., 2013; Frazelle & Nagel, 2015). The risk factors that are tracked in an EWS are referred to as Early Warning Indicators (EWIs) (Davis et al.,

2013). The main purpose of the EWS is to use student data to identify students who may be off-track for graduation, and provide supports and interventions to help students back on-track. The EWS can also help identify on-track patterns among students (Frazelle & Nagel, 2015).

In theory, an EWS is a more collaborative approach in which administrators, teachers, and parents or problem-solving teams can use data to assess whether students are on track or in need of additional resources and/or interventions (Neild, Balfanz, & Herzog, 2007). In practice, however, it is important for an EWS to be well organized and efficient. Frazelle and Nagel (2015) identified five main components that are needed to implement a successful EWS: (1) creating and training a team to use the EWS, (2) identifying accurate EWIs, (3) designing and using reports, (4) using appropriate interventions for each individual student, and (5) evaluating progress and effectiveness of interventions.

Kennelly and Monrad (2007) specified detailed steps to consider when setting up an effective EWS. Their suggestions are based on considerable research and aim to identify students even earlier than high school age, when possible:

1. Establish a data system that tracks individual student attendance, grades, promotion, status, and engagement indicators, such as behavioral marks, as early as fourth grade.
2. Determine criteria for who is considered off-track for graduation and establish a continuum of appropriate interventions.
3. Track ninth grade students who miss 10 days or more of school in the first 30 days (Neild & Balfanz, 2006). Even moderate levels of absences are a cause for concern. Just one to two weeks of absence per semester - which was typical for freshmen participating in a key Chicago study - was found to be associated with a substantially reduced probability of graduating (Allensworth & Easton, 2007).
4. Monitor first quarter freshman grades, paying particular attention to failures in core academic subjects. Receiving more than one F in core academic subjects in ninth grade- together with failing to be promoted to tenth grade - is 85%

successful in determining who will not graduate on time (Allensworth & Easton, 2005). Schools can offer immediate academic supports to the students who are failing in the first quarter of freshman year.

5. Monitor fall semester freshman grades, paying particular attention to failures in core academic subjects. As first semester grades are posted, schools can develop individual student dropout strategies. By the end of the first semester, course grades and failure rates are slightly better predictors of graduation than attendance because they indicate whether students are making progress in their courses (Allensworth & Easton, 2007).
6. Monitor end-of-the-year grades. The end-of-the-year grades will provide further information about failure rates and reveal grade point averages, providing detailed information about who is likely to struggle in later years and is considered by some researchers to be the best indicator for predicting nongraduates (Allensworth & Easton, 2007). In general, grades tend to be a more accurate predictor of dropout than test scores.
   Track students who have failed too many core subjects to be promoted to tenth grade. This provides perhaps the most critical information about which students should receive specialized attention and support. Research has shown that those who fail to be promoted are more likely to drop out. According to Alexander, Entwistle, and Horsey (1997), being held back trumps all for dropout indicators. (pp. 7-8)

Kennelly and Monrad (2007) mention several EWIs to track. Kennelly and Monrad's (2007) steps also suggest that EWIs can be grade specific. For example, Balfanz et al. (2007) found that around 60% of future dropouts can be identified with accuracy as early as 6th grade, using only four major indicators: poor attendance, poor behavior marks, failing math, or failing English. Interestingly, the study also confirmed that students who drop out do so in different but identifiable ways. They found that in their 6th-grade sample, the most common occurrence was students having the risk factors of either poor behavior or low attendance; or two factors, especially poor behavior combined with failing one of their core classes (Balfanz et al., 2007). Another study found that 22% of 9th-grade students who did not have enough credits to be promoted to 10th grade went on to graduate from high school in 4 years (Allensworth & Easton, 2005, 2007). The same study also found that on-track status was a more powerful predictor of

high school graduation than test scores and demographic characteristics combined (Allensworth & Easton, 2005, 2007). The results from this study confirm the importance of the 1st year in high school. The 9th-grade transition year can set the stage for whether or not a student drops out of high school or does not complete high school in the traditional 4 years.

Previous EWS research should act as a guide; however, a school community should identify the specific EWIs that are the most accurate indicators for their students. Frazelle and Nagel (2005) suggest that school personnel examine student data from previous school years to identify the EWIs that are most related to student performance and graduation. The University of Chicago Consortium on Chicago School Research (2014) also recommends that EWIs should be valid for the intended purpose, actionable, meaningful and easily understood, and match district and school priorities. The Consortium also suggested that EWS teams only use indicators that the school has control over. Tracking indicators such as family factors should be avoided although there is a strong correlation between these factors and school completion. Frazelle and Nagel (2015) suggest that EWS teams start with a base set of indicators such as attendance, behavior, and academic performance in classes. School teams can then add indicators that are unique and helpful to identify their own students who are off-track. Also, end of year assessment scores may not be the best EWIs; student progress can be better assessed in shorter, more measurable intervals (Frazelle & Nagel, 2015).

An EWS needs to be implemented with fidelity, and requires support from administration and the school community. EWSs are being used across the country, and are being implemented in a number of different ways. For example, Sioux Falls District

uses teams at the district level to track students' progress toward graduation, while Houston Independent School District has EWS teams at the school level that incorporate other community resources (Frazelle & Nagel, 2015). The National High School Center recommends a mixed-level team approach with stakeholders at the district and school-level, and incorporating staff from not only the high schools, but also stakeholders from middle schools that feed into the high schools. Some other considerations when implementing an EWS are to make sure roles are clearly defined, and create S.M.A.R.T. (specific, measurable, achievable, relevant, and time bound) goals (Kekahio & Baker, 2013). Johns Hopkins University School of Education, Center for Social Organization of Schools (2010) has a specific breakdown of how an EWS meeting should be set up and run. Furthermore, school districts should aim to provide initial and continued professional development to help the EWS teams work more effectively. Also, involving community organizations can be useful to help ease the workload of school staff. The school district where the present study will take place uses problem-solving teams with teachers, administrators, and other school staff members to analyze data and come up with school-based solutions. There is also district level department that provides professional development and support to help school teams use data to make data-driven decisions. There is a great deal of information on how to set up an EWS; however, the data examining the effectiveness of EWSs are still somewhat limited (Frazelle & Nagel, 2015).

Considering the long history of dropout research, it has taken some time to draw conclusions about how to track and intervene with students who are at-risk for not completing high school. Researchers, such as Jerald (2006), have called into question

why there has been a lack of research on EWIs, especially after over 40 years of documented concern over student dropout. Fortunately, the analysis of EWIs in conjunction with EWSs has significantly increased over the past 5 years (Davis et al., 2013) and likely will continue.

Prevention and Intervention Programs

Once students and specific risk factors have been identified using an EWS it is important to provide students with appropriate supports or services through intervention programs that are going to meet their unique needs. This can be difficult if a school does not have a number of different programs to meet all of the needs of their student body. Along with having programs tailored for the needs of at-risk students to prevent dropout, these programs need to be effective and administered with efficacy. This has been a criticism because school districts have used intervention and prevention programs for years, but there have not been many systematic studies on these programs' effectiveness. Gleason and Dynarski (2002) suggest that effective intervention and prevention programs may be few in number because it is difficult to match programs to students' unique psychosocial and academic needs. They go on to argue that many dropout prevention programs are one-size-fits-all, and are not effective for all students (Gleason & Dynarski, 2002). Schools should consider students' individual risk factors and try to match them with appropriate prevention services. If schools do not have access to a particular dropout prevention program they should investigate prevention and intervention strategies that have been proven to be effective with different at-risk populations (Gleason & Dynarski, 2002).

Hammond et al. (2007) from the National Dropout Prevention Center/Network

and Communities In Schools, Inc., did an extensive literature review to identify effective intervention and prevention programs for a wide range of at-risk students. In order to meet criteria as exemplary, the program had to be ranked in the top tier or level by at least two sources, currently be in use, have no major revisions since the program was ranked, have consistently positive outcomes, and focus on school-aged children in grades K-12. The review identified 50 evidence-based programs with many programs tailored toward specific at-risk student populations. The review cautioned that there are a number of flaws in dropout prevention program research such as: there has been little rigorous evaluation of program effectiveness, there is a lack of longitudinal data, and few programs meet the criteria for the U.S. Department of Education's *What Works Clearinghouse* (Dynarski et al., 2008).

The criteria for U.S. Department of Education's *What Works Clearinghouse* for a classification of having "*Strong"* evidence are programs and/or practices that have both high internal validity and external validity (Dynarski et al., 2008). This means that the study design needs to be able to support conclusions, and that results generalize to multiple settings and participants. The study designs that are recommended are well-designed randomized controlled trials or quasi-experimental (without randomized control). Further, evidence is stronger with multiple studies, and there should be no studies that contradict the results (Dynarski et al., 2008).

The U.S. Department of Education's *What Works Clearinghouse* outlines six recommendations for dropout prevention (Dynarski et al., 2008). Their first recommendation is to use data systems or an EWS to estimate the number of students who are noncompleters and identify individual students who are at-risk. Next, they

suggest assigning an adult to be an advocate for students who are at-risk. The third recommendation is to make sure the students have academic supports and enrichment through targeted interventions. Fourth, in conjunction with academic supports, students with social and behavioral problems should be identified and supported through targeted interventions to help improve behaviors and functioning. The fifth recommendation is that school wide, students' learning environments and instruction should be personalized to meet their unique educational needs. The final recommendation is to provide rigorous and relevant instruction to help keep students engaged and provide students with skills they will need to graduate and be successful. It should be noted that these recommendations are not backed by "*Strong"* evidence, and are only supported by research that meets the criteria for "*Moderate*" or "*Low*" evidence. Because of this lower threshold of evidence, the authors from the U.S. Department of Education's *What Works Clearinghouse* suggest that multiple recommendations be implemented as part of a comprehensive approach to preventing high school dropout (Dynarski et al., 2008).

As would be expected, the U.S. Department of Education's *What Works Clearinghouse*'s recommendations are consistent with many of the components of the exemplary programs discussed in the review by Hammond et al. (2007). Hammond et al. (2007) also suggest that in order for programs to be more comprehensive and effective, multiple components and strategies that have been shown to be effective should be used. The identified programs and approaches fit into two major categories: (1) dropout prevention, and (2) intervention for students already exhibiting early warning signs for school dropout. The major key components across many of the exemplary programs include having well-trained and qualified staff to implement the prevention or

intervention program; take-home resources for students and their parents (i.e., videos, self-help materials, activities, newsletters, and interactive games); a variety of "dosage" levels including length and frequency; and follow-up and booster sessions. Furthermore, the identified programs in the review contained strategies and curriculum focusing on increasing social skills, communication, and problem-solving, as well as targeting academic achievement through homework assistance and tutoring. Many exemplary programs also included a component about helping students to better understand realistic norms for things such as prosocial behaviors, healthy eating habits, sexuality, violence, and substance use. An interactive/role-playing component is typically incorporated when norms are explicitly taught. This strategy has also been shown to be effective in increasing generalization.

Another group of researchers conducted a meta-analysis of 152 studies focusing on general dropout programs, and another 15 studies for teen parents (Wilson et al., 2011). The results suggested that both the general and the more specific programs for teen parents were effective. The study further found that programs that had higher levels of implementation quality tended to yield larger effect sizes (Wilson et al., 2011). Interestingly the conclusions drawn from the meta-analysis were that most school- and community-based programs were effective in increasing school completion; therefore, the type of program may not matter, as long as it is being implemented with integrity (Wilson et al., 2011).

It is important not only to consider the general conclusions from dropout prevention research, but also specific prevention and intervention programs that are research-based. Check & Connect (Christenson et al., 2012) is based on Finn's (1989)

Participation-Identification Model and has shown great outcomes for students. The Check & Connect program uses four tenets: 1) a mentor that builds a longstanding relationship with the student and family, 2) regular checks on student data (academics, behavior, and attendance), 3) timely interventions, and 4) partnership with families. This program is included in the *What Works Clearinghouse* (Dynarski et al., 2008). The program draws on four different theoretical perspectives: systems-ecological, resilience, cognitive-behavioral, and autonomous motivation. The resilience theory portion of the intervention is the use of a mentor who forms a relationship with the student. The mentors know that it is easier and more effective to draw on the school and community resources than to try to create new resources and programs. The mentors also encourage students to be self-motivated and goal-oriented, and provide many strategies and opportunities for problem solving. This is the autonomous motivation perspective (Reschly & Christenson, 2012). Check & Connect consistently has positive outcomes for students, including improved attendance, improved passing rate, decreased suspensions, and improved dropout rates (Reschly & Christenson, 2012). The program aims to keep students engaged and connected to school.

Strategies Specific to the Ninth-Grade Year

The transition years from elementary school to middle school and middle school to high school are particularly challenging for students. Students find it challenging to adjust to the new academic and social demands. The experiences students have during these years have a direct impact on student success. Students may begin to disengage without sufficient support and access to a positive school climate (Balfanz et al., 2012). In many school districts, 9th grade is the year many students transition to high school. The

9th-grade year is also the year that statistically more students fail then any other school year (National High School Center, 2012). Students who struggle to pass their classes and attend school are then off track for graduation when they are promoted to 10th grade. In many schools, 9th grade is the largest due to students being retained in 9th grade or students beginning to dropout of high school in 10th grade; this phenomenon is known as the 9th-grade bulge and the 10th-grade dip (National High School Center, 2012). For these reasons, the transition years are critical to make sure students remain engaged and connected to school, and on a continued path toward graduation.

For the current study, 9th grade was the year students transitioned from middle school to high school; however, in the prior academic year (2013-14) both the 9th-grade and 10th-grade students transitioned at once because of restructuring. The research strongly backs the need to support 1st-year high school students to help prevent a decrease in attendance and grades (Barone, Aguirre-Deandreis, & Trickett, 1991). For example, Reents (2002) found that the schools with transition programs had a dropout rate of 8% compared to 24% at schools without transition programs. However, a survey by the *U.S. Department of Education's National Center for Education Statistics, Dropout Prevention Services and Programs in Public Schools and Districts, 2010 to 2011*, found that many of the schools sampled did not have adequate transition supports for students. The survey found that only about 40% of districts reported that at least one of their high schools had an advisory period to help students with the transition, only about 26% reported assigning students an adult mentor, and only 20% assigned a student mentor. On a positive note, 77% of the school districts sampled reported the use of one-on-one interventions, in which a school staff member (i.e., counselor, administrator, teacher) provided mentorship

to at-risk students; however, these supports were far fewer for smaller and rural school districts.

As previously discussed, many school districts rely on adult mentors to provide intervention and support to at-risk students. Research supports having an adult at the school act as a mentor to provide guidance and knowledge to the student (Balfanz et al., 2012); however, the *U.S. Department of Education's National Center for Education Statistics, Dropout Prevention Services and Programs in Public Schools and Districts, 2010 to 2011*, found that many school districts do not hire additional staff to provide this support to students. Only about 12% of the school districts reported hiring additional staff. School districts reported using community resources more often, at around 30%. This includes community volunteers, child protective services, community mental health agencies, state or local government agencies, churches, or health clinics.

Aside from adult mentors, there are many other strategies that are effective in helping students successfully transition from middle to high school. One of the strategies that provides support to transitioning students is 9th grade academies. Ninth-grade academies are learning environments that are either separate from the rest of the school or a completely different school (Reents, 2002). Academies are set up to provide more support to the students, and help to make the transition less overwhelming. Another similar approach keeps students in the same small learning academies for two to four years; groupings that are based on students' interests are called career academies (Brand, 2009).

Herlihy (2007) from the National High School Center identified five ways schools can help ensure students successfully transition from 9th to 10th grade. First, the school

should have an established data monitoring system, much like an EWS that was discussed previously, where school personnel can easily identify at-risk students. Second, the school needs to consider the students' instructional needs, and make sure students are receiving appropriate curricular supports and classes. Third and fourth, schools need to personalize student learning to address individual needs; to do so, the school should have a wide range of supports and services available to help personalize a student's learning environment. Lastly, it is important for schools to help students make the connection of why their education is important, and how it can be necessary for future employment and/or admissions into colleges/universities.

Barber and Olsen (2004) found that students in 9th grade perceive the supports and activities available to them differently than students in other grades. Ninth-grade students' perception is that they have less support from teachers and principals then they did in middle school. In general, they also report liking school less. Students in 9th grade also report being less involved in school activities, but conversely, say that there need to be more school organizations. These students also reported lower self-esteem and higher rates of depression than middle school students.

The Link Crew program is an evidence-based transition program. Link Crew aims to help 9th-grade students feel welcome and connected in their 1st year of high school. The program trains 11th- and 12th-grade students to be peer mentors to 9th-grade students to help them have a successful freshman year. Link Crew spans the entire freshman year, and includes a high school orientation, academic follow-ups, social follow-ups, and leader initiated contacts. There is also a school safety and antibullying component built in (Boomerang Project, 2011). Research suggests that schools that implemented the Link

Crew program saw improvements in office referrals with a 37% decline, suspensions with a 20% decline, absences with a 33% decline, and tardies with a 7% decline (Boomerang Analysis, 2011). There was also a 6% decrease in Ds and Fs among 9th-graders, and a 3% drop in the number of students who had failed one class or failed more than three classes (Boomerang Analysis, 2011).

The Impact of Extracurricular Activities

Since the 1960s, researchers in a number of different fields (sociology, economics, and psychology) have studied the impact of extracurricular activities on the development of children and adolescents (Feldman Farb & Matjasko, 2012). The impact of extracurricular activities is often explained using Bronfenbrenner's (1979) ecological theory. An adolescent's participation in an extracurricular activity helps shape their environment through their interactions with peers, mentors/coaches, and the characteristics of the activity. These interactions then in turn influence their development.

Feldman Farb and Matjasko (2012) recently reviewed research on the study of extracurricular activities and the impact on adolescent development. They also summarized results from a review by Holland and Andre (1987) and their previous review (Feldman & Matjasko, 2005). Holland and Andre (1987) found that most studies demonstrated a positive relationship between participation in athletics and adolescent development. Their previous review found that the research since Holland and Andre's (1987) review was mainly replication studies with an expansion from solely looking at athletics to now looking at other extracurricular activities. Analysis techniques were also updated (Feldman & Matjasko, 2005). The results from their previous review indicated that the studies had mixed results. For example, some studies found that there were

negative outcomes to participation in extracurricular activities such as sports because participation in sports was correlated with higher substance use and sexual activity in males (Feldman & Matjasko, 2005); however, many of the studies found that participation in extracurricular activities was generally positive for students' development.

The most current review addressed a number of limitations in previous research including: measurement of participation; intensity, breadth, and duration of participation; person-centered approaches; and threshold effects (Feldman Farb & Matjasko, 2012). These advancements helped to further differentiate outcomes for groups and helped to define when extracurricular participation is no longer beneficial.

The review found many of the same positive associations. For example, they found that continued participation was associated with attainment of educational goals, college acceptance, and prosocial behaviors. Further research suggested that there was a threshold and that past a certain point there was no further relationship with positive outcomes. This is known as the overscheduling hypothesis (Feldman Farb & Matjasko, 2012). The review cited a study by Luther and colleagues (2006) that used cluster analysis to identify groups of students among an affluent student sample who were overscheduled. They did not find any particular group of students that met criteria for being overscheduled, but they did find that student perceptions about parental pressure and lack of afterschool supervision led to poorer adjustment. This suggests that there could be other moderating variables that could explain differences in outcomes among students. Two other studies explored the relationship between overscheduling and psychological adjustment, and found a relationship between time spent in the activity and anxiety levels (Melman, Little, & Akin Little, 2007). Another study completed by

Mahoney and colleagues (2006), found that Black youth who participated in extracurricular activities for more than 20 hours had lower self-esteem, suggesting that this could possibly be due to spending less time having meaningful discussions with their parents. The study also found that across groups, youths who spent 15 or more hours a week in organized activities, were more likely to report more alcohol use than youth who spent less than 15 hours in extracurricular activities. All of the studies found somewhat different results, suggesting that the number of hours spent in an activity does not necessarily equate to better outcomes and additional variables need to be considered.

The review found that studies that attended to the intensity, breadth, and duration of participation in extracurricular activities identified qualitative differences in adolescent experiences that could potentially impact developmental outcomes (Feldman Farb & Matjasko, 2012). In general, the way researchers measure intensity is by looking at the number of hours of participation a week or the number of days per week participating in the activity. The review found that there is typically a positive relationship between academic grades, long-term aspirational goals, and educational goal attainment (Darling, 2005; Denault & Poulin, 2009). Breadth, or the sum of different types of activities, was another variable that was analyzed. In general, there was a positive relationship between the number of different activities an individual is involved in and the individual's academic and other school outcomes; however, there was a threshold effect with students not having continued positive effects if participating in more than six to eight different activities (Rose-Krasnor et al., 2006). Breadth was usually the variable that explained variance in outcomes, suggesting that adolescents who are involved in a variety of activities are typically more well-adjusted (Feldman Farb & Matjasko, 2012).

The review also reported results from two studies that looked at different types of group involvement; this approach is called person-centered (Feldman Farb & Matjasko, 2012). The person-centered approach uses cluster analysis to categorize different types of participation styles. From the person-centered research, there were two very interesting findings regarding student engagement. First, students who were categorized as "unstructured," who spent their time playing video games or engaging in nonschool related activities, showed the poorest school perception, poorest attendance, and lowest academic achievement in comparison to other groups. In contrast, students who were categorized into the "all-around" group, who participated in a number of different activities (school-based and nonschool-based), showed the best outcomes for school perception, attendance, and academic achievement (Nelson & Gastic, 2009). Secondly, similar results were found in at-risk adolescent samples (Metzger, Crean, & Forbes-Jones, 2009; Peck et al., 2008). The research using person-centered approaches is a promising avenue because it sheds light on qualitative differences in how different participation styles impact achievement outcomes.

In general, the extracurricular activity research suggests that participation in school-based extracurricular activities generally has a positive impact on adolescent development and student outcomes. The research also indicates, however, that it is important to consider group differences, duration, frequency, intensity, and threshold effects as potential moderators for student and adjustment outcomes.

Utah Dropout Trends and Prevention Initiatives

There are trends nationally and locally to focus efforts on increasing high school graduates' knowledge and skills in order to be ready for college and/or a career. In Utah,

the Strengthening the Senior Year/Career and College Ready (SY/CCR) Work Group was created by the Utah State Office of Education (USOE) to address the issues concerning college and career readiness. The SY/CCR Work Group evaluated effective and innovative practices that have worked at the state and national levels, and found three common themes on which they based their recommendations: (1) "providing rigorous and relevant coursework;" (2) "connecting students with multiple pathways, options, and supports;" and (3) "strengthening education and career planning by providing, effective guidance and planning systems and processes at every level from grade six through grade 12" (Utah State Office of Education, 2010).

The Work Group's report states that high-stakes assessments that potentially affect college and career decisions are completed prior to senior year, which provides little incentive for students to try hard during one's senior year. In fact, students who may not have done well on previous high-stakes assessments and struggled academically may feel like giving up academically and possibly dropping out (Utah State Office of Education, 2010).

To better understand high school completion rates in Utah, the USOE began tracking students from their 10th-grade year to the end of their 12th-grade year in 2007 (Utah State Office of Education, 2010). Their findings suggest that the graduation rate in Utah is around 88%, and has been consistent over the past 3 years; however, there are disparities in graduation rates across different ethnic and disadvantaged groups. Students who were identified as having a disability had a graduation rate of 81%, economically disadvantaged students had a graduation rate of 78%, African American students' graduation rate was 77%, American Indian students' was 74%, Hispanic students' was

71%, and English Learners (ELs) was 69% (Utah State Office of Education, 2010). The most recent data from the Utah State Office of Education (2013) suggest that the graduation rate for the 2013 graduating class was 81%, calculated using the 4-year cohort rate. Graduation rates have increased by 3 percentage points from 2012 to 2013. The recent data also suggest that the graduation rate for Hispanic students has increased by 5 percentage points, for students identified with a disability 4 percentage points, and for ELLs 9 percentage points, from 2012 to 2013 (Utah State Office of Education, 2013). Although graduation rates are increasing for many subgroups, these data continue to indicate that the needs of a large number of students in the Utah public school system are not being met, and that there is a need for system improvement.

The USOE's findings and research suggest that there is a need for curriculum to be relevant and engaging for students. With that said, students have differences in what is relevant and interesting to them; all students should feel that they are able to access an education that meets their own educational and/or career goals. There are many programs being implemented in Utah schools that potentially meet the varying educational/career needs of students, including work-based learning, career pathways, alternative education, acceleration and enrichment opportunities, youth options, and collaborative initiatives to improve attendance (Utah State Office of Education, 2010). The main purpose of these programs is to keep students engaged, and continue to provide meaningful learning opportunities.

The USOE (2014) has also created a Utah Statewide Dropout Prevention Committee to "identify a set of strategies and practices that are key components of interventions that have demonstrated promise in reducing dropout rates" (p. 9). The

committee came up with a practice guide and the recommendations within the practice guide are made up of a combination of what Local Education Agencies (LEAs) are currently using across the state that have shown good outcomes and strategies promoted by the IES Guide for Dropout Prevention (Dynarski et al., 2008; USOE, 2014). The practice guide consists of six recommendations: using data systems that report the number of students who drop out and identify students at-risk for dropping out, assigning adult mentors to at-risk students, providing targeted academic interventions to at-risk students, implementing targeted behavior and social skills interventions, personalizing the learning environment and instruction, and providing rigorous and relevant instruction to engage all students and provide them with skills that they can use in their postsecondary schooling and/or career (Utah State Office of Education, 2014). These recommendations are consistent with guidelines set by the U.S. Department of Education's *What Works Clearinghouse* (Dynarski et al., 2008).

Rationale for Current Study

High school dropout prevention continues to be an issue in the United States' educational system with a graduation rate of around 80.0% (Stetser & Stillwell, 2014). This is the lowest student dropout numbers have ever been, partly because schools continue to try to improve in their efforts to intervene with students who may be at-risk. Much of the research on dropout prevention has focused on identifying risk factors, and there are a number of factors that potentially place a student at risk for dropout. Of those, there are a few factors that have been pinpointed as predominant risk factors and red flags for student disengagement: attendance, behavior, and academic performance, especially in core classes.

EWSs have been recommended as a way to track attendance, behavior, and academic concerns. Schools can easily utilize an EWS framework to help identify those students who may be at-risk and in need of additional support and intervention. Furthermore, increased access to electronic student data has helped improve the ability of schools to track those students who may be at-risk. These students can then be provided with appropriate interventions and supports after they have been identified as at-risk and in need of services. It is important for schools to make sure that the data from the EWS are used efficiently to identify and place students in intervention services. Further challenges include that many schools have limited resources to meet the needs of all of their at-risk students, and many school programs have not been assessed for efficacy. Therefore, it is important to better understand how current school-based intervention and prevention programs can be effective for at-risk students who have been identified through EWSs. The current study aimed to assess whether the target school's EWS and prevention/intervention programs were effective in improving outcomes of attendance, behavior, and academic performance.

Student disengagement from school is another major risk factor that researchers and school personnel can measure, monitor, and change. Appleton et al. (2006) conceptualized student engagement into four categories: academic, behavioral, psychological, and cognitive. The current study will focus on examining the impact of psychological and cognitive engagement on student outcomes. Appleton and Christenson (2004) created a student self-report measure to more accurately measure psychological and cognitive engagement, called the SEI. The current study used the SEI to assess students' psychological and cognitive engagement, while the EWS was used to track

attendance, academic performance, and reported behavior problems as indicators of dropout risk. Furthermore, the study aimed to look at how participation in school-based at-risk programs and extracurricular activities potentially act as protective factors for student engagement. This is important because few studies have looked at the impact of school-based dropout prevention programs on student engagement and the EWI variables of attendance, behavior, and academic performance while also evaluating the effectiveness of the EWS.

The study also attempted to answer secondary research questions focused on the 9th-grade transition year. The target high school implemented a universal transition program for the incoming 9th-grade class. The transition program used assigned peer mentors, who were 11th- and 12th-grade students, to help provide support and insight to 9th-grade students. Since this was a new program the past school year, the previous year's 9th-grade class did not have assigned peer mentors. To assess the effectiveness of the transition program, the study examined differences in EWIs and student engagement between the 9th-grade students and 10th-grade students (the previous year's 9th graders). The study also examined improvement in EWIs and student engagement variables from fall to the spring for both 9th- and 10th-grade students. Also, since previous research has found differences in dropout rates based on income, race/ethnicity, and other factors, the study included analyses of the influence of these demographic variables on student outcomes.

Research Questions

The following questions were the focus of this research project:

1. Are students who are identified through an Early Warning System (EWS) as "at-

risk," the same students who are connected to school-based supports and at-risk services?

2. Does participation in school-based supports and at-risk programs result in an increase in students' self-report of cognitive and psychological engagement?
    a. Does participation in school-based at-risk programs increase students' psychological engagement on the Student-Teacher Relationships factor?
    b. Does participation in school-based at-risk programs increase students' psychological engagement on the Peer Support for Learning factor?
    c. Does participation in school-based at-risk programs increase students' psychological engagement on the Family Support for Learning factor?
    d. Does participation in school-based at-risk programs increase students' cognitive engagement on the Future Aspirations and Goals factor?
    e. Does participation in school-based at-risk programs increase students' cognitive engagement on the Control/Relevance factor?
3. Is there a correlation between students' self-reported level of cognitive and psychological engagement and specific Early Warning Indicator (EWI) variables?
    a. Is there a positive correlation between students' cognitive and psychological engagement and GPA?
    b. Is there a negative correlation between students' cognitive and psychological engagement and days absent?
    c. Is there a negative correlation between students' cognitive and psychological engagement and discipline referrals?
4. Does participation in school-based supports and at-risk programs correlate with

attendance, academic performance, and reported behavior problems as indicators of dropout risk. Furthermore, the study aimed to look at how participation in school-based at-risk programs and extracurricular activities potentially act as protective factors for student engagement. This is important because few studies have looked at the impact of school-based dropout prevention programs on student engagement and the EWI variables of attendance, behavior, and academic performance while also evaluating the effectiveness of the EWS.

The study also attempted to answer secondary research questions focused on the 9th-grade transition year. The target high school implemented a universal transition program for the incoming 9th-grade class. The transition program used assigned peer mentors, who were 11th- and 12th-grade students, to help provide support and insight to 9th-grade students. Since this was a new program the past school year, the previous year's 9th-grade class did not have assigned peer mentors. To assess the effectiveness of the transition program, the study examined differences in EWIs and student engagement between the 9th-grade students and 10th-grade students (the previous year's 9th graders). The study also examined improvement in EWIs and student engagement variables from fall to the spring for both 9th- and 10th-grade students. Also, since previous research has found differences in dropout rates based on income, race/ethnicity, and other factors, the study included analyses of the influence of these demographic variables on student outcomes.

Research Questions

The following questions were the focus of this research project:

1. Are students who are identified through an Early Warning System (EWS) as "at-

students' psychological engagement on the Family Support for Learning factor?

d. Does participation in the 9th-grade student transition program increase students' cognitive engagement on the Future Aspirations and Goals factor?

e. Does participation in the 9th-grade student transition program increase students' cognitive engagement on the Control/Relevance factor?

7. Is there a difference in Early Warning Indicator (EWI) variables between the 9th-grade class who participated in the transition program and the 10th-grade class who did not participate in the program the previous school year?

   a. Does the 9th-grade class have higher GPAs than the 10th-grade class?

   b. Does the 9th-grade class have fewer days absent than the 10th-grade class?

   c. Does the 9th-grade class have fewer discipline referrals than the 10th-grade class?

8. Do differences in demographic background variables of socioeconomic status, race, ELL status, gender, grade, and/or middle school of origin correlate with participation in at-risk programs, level of cognitive and psychological engagement, and/or Early Warning Indicator (EWI) outcome variables?

CHAPTER 2

METHOD

Participants

The participants were enrolled in a high school in a suburban school district within a large Western city. The high school had around 2000 students enrolled throughout the school year. The Student Engagement Inventory (SEI) was administered to 9th-, 10th-, 11th-, and 12th- grade students attending the target high school in the spring of the 2014-15 school year to gather information about students' cognitive and psychological engagement. The spring data collection had an initial sample size of 1,467, which was around 75% of the entire student population; this represents the number of students who completed the Student Engagement Inventory (SEI). There were some missing data points on important variables such as the Student Engagement Instrument (SEI), but the missing cases on each item the SEI were fairly small in comparison to the sample size (0.4 % to 2.1%). The missing cases were removed because there was such a small percentage compared to the sample, and a large sample size would remain for analysis. The remaining sample size was *N*=1,314. This sample was referred to as Sample 1 (see Table 1). The sample was 52.7% (*n*=693) male and 47.3% (*n*=621) female. The sample was made up of 25.0% (*n*=328) 9th graders, 28.8% (*n*=378) 10th graders, 25.6% 11th graders (*n*=336), and 20.7% (*n*=272) 12th graders. The self-reported race make-up of the school sample was as follows: White 71.9% (*n*=945), Hispanic-Latino 9.9% (*n*=130),

American Indian 0.5% (*n*=6), Asian 1.9% (*n*=25), African American/Black 2.0% (*n*=26), Pacific Islander 1.9% (*n*=25), Multiracial 9.8% (*n*=129), and Other 2.1% (*n*=28). Since many of the racial groups had small sample sizes, the data were broken into the groups "White" (71.9%, *n*=945) and "Non-White" (28.1%, *n*=369). The proportion of students in special education programs was 8.2% (*n*=108) and 4% (*n*=57) of students were identified as English Language Learners. The information on low income students was based on the list of students who qualified for fee waiver and free and reduced lunch. Unfortunately, the list available from the school was missing many of the students who participated in the survey and only 916 students were matched to the sample. Of those students, 27.1% (*n*=248) were low income students, and 72.9% (*n*=668) were not low income students. Based on risk level, Sample 1 included 50.3% (*n*=661) "low risk" 28.1% (*n*=369) "at-risk" 21.6% (*n*=284) "significant risk" students. The sample was also analyzed for participation in at-risk and prevention programs. In the at-risk programs, 1.8% (*n*=23) students participated in the Reading Class, 7.2% (*n*=94) participated in Math Lab, 5.5% (*n*=72) participated in the Study Skills class, and 8.2% (*n*=108) received special education classes and support services. In the prevention programs, 3.9% (*n*=51) participated in Latinos in Action (LIA), and 8.4% (*n*=111) participated in Advancement via Individual Determination (AVID).

The SEI was also previously administered just to 9th and 10th graders in late January 2015 to assess change in student engagement over time (January to Spring). Data from the two administrations were combined to help answer some of the secondary research questions. The total sample size for 9th- and 10th-grade students who took the SEI during both administrations was 746, which was around 75% participation rate of the

9th- and 10th-grade student population. Missing data cases were removed and the final sample size for 9th- and 10th-grade students with two complete data points was 596. This sample was referred to as Sample 2. There were 318 (53.4%) male students and 278 (46.6%) female students. The sample had 44.1% (*n*=263) 9th-grade students and 55.9% (*n*=333) 10th-grade students. The self-reported racial make-up was as follows: White 68.0% (*n*=405), Hispanic 12.9% (*n*=77), Black 2.3% (*n*=14), Asian 1.7% (*n*=10), Pacific Islander 1.8% (*n*=11), American Indian 0.7% (*n*=4), Other 2.3% (*n*=14), and Multiracial 10.2% (*n*=61). The proportion of students in special education programs was 8.1% (*n*=48) and there were 5% (*n*=32) of students who were identified as English Language Learners (ELL). The information on low income students was based on the list of students who qualified for fee waiver and free and reduced lunch. Unfortunately, the list was missing many of the students who participated in the survey and only *n*=301 students were matched to the sample. Of those students, 33.2% (*n*=100) were low income students and 66.8% (*n*=201) were not low income students. The demographic information for Sample 2 is in Table 2.

Setting

The participating high school was located in a large suburban school district, and served students from a wide range of socioeconomic backgrounds. The school district has an electronic Early Warning System (EWS) that tracks the EWI variables of attendance, grades, and behavior. The EWS data are used by problem-solving teams to help identify students as at-risk and connect those students to appropriate school supports and programs. The school offers a plethora of extracurricular school-based activities for students, including several at-risk programs.

The at-risk programs in place at the school that were included for analysis in the current study are Advancement via Individual Determination (AVID), Latinos in Action (LIA), Study Skills, Math Lab, Reading class, and Special Education. AVID was initially created for students in grades 6 through 12, who are typically the underrepresented "academic middle" students, and provides structured teaching methods to help make the curricula more accessible to the students. The staff are highly trained to help implement AVID goals. Further, the school staff aim to eliminate low-level tracking and provide academic and motivational supports (San Diego County Office of Education, 1991). Adult tutors support the teachers, and help lead Socratic seminars in classrooms. There are research studies that support the effectiveness of AVID as a school reform model to improve student outcomes. Watts and colleagues (2002) found that students who were in the AVID program preformed better on standardized testing and attended school more often. A 4-year longitudinal study by Guthrie and Guthrie (2000), found that students who were in the AVID program for 2 years had higher GPAs than those with only 1 year or no AVID experience, earned credits that placed them on track for 4-year college acceptance, and took more Advanced Placement (AP) classes than students with 1 year or no AVID experience. They found that 95% of the AVID graduates were enrolled in a college or university following high school (Guthrie & Guthrie, 2000). AVID is included on the Hammond et al. (2007) *Exemplary Program* list of programs with high levels of evidence supporting its efficacy as an effective program in preventing high school dropout.

LIA is a program that utilizes a classroom format to help empower Latino students in middle and high school through culture, service, and academic achievement.

Enriquez (2012) found that Latino students enrolled in LIA reported higher levels of school engagement, desire for educational attainment, and feelings that school was a major factor in self-understanding than their Latino peers not enrolled in LIA. The study also found that the students involved in LIA increased their leadership and social skills, and their drive for school success (Enriquez, 2012).

The participating school also had a Study Skills class, which provided students with explicit instruction on study skills necessary to gain access to the curriculum, and become effective and independent learners. Paulsen and Sayeski (2013) emphasize that successful high school students have effective management skills such as, study habits, time management, and self-management, and cognitive study habits including, interpreting visuals, using references, and taking notes. Explicit study skills instruction and mentoring of students about academics and school attendance are components in exemplary programs (Hammond et al., 2007). The effectiveness of the Study Skills program offered by the school was not assessed previously, but does include efficacious practices as reported in the research literature.

Aside from the Study Skills program, the participating high school also provided a Math Lab (math class) and a Reading class for students with low math and/or reading achievement. Math Lab could also be used as credit recovery for students who may have failed a math class. Math Lab is a form of "double-dosing" in which students' receive more instructional time, which gives them more opportunities to learn and retain the curriculum (Cortes, Goodman, & Nomi, 2013). There is evidence that double dosing has a positive and long-lasting effect on student achievement in math (Cortes et al., 2013). Math Lab also preteaches concepts, which has been shown to be effective in many

academic areas including math. Lalley and Miller (2006) specifically looked at differences between preteaching and reteaching math concepts, problems, and computation. They found that both effectively increased knowledge of math concepts, math computation, and problem mastery. The study also found that students who were in the preteaching group significantly increased their self-concept related to math abilities, where the reteaching group did not. Improvements in self-concept could potentially impact school engagement.

The Reading class is designed for students who are struggling with reading fluency or decoding. It is offered to students who are identified through a double-gating procedure as at-risk for academic failure due to reading difficulties. Students are first administered the Scholastic Reading Inventory (SRI), and then administered a Curriculum-Based Measurement (CBM) of reading fluency. Students who qualify are strongly encouraged to enroll in the reading class in order to improve their likelihood of success in their high school classes.

The participating school also had a school-wide peer mentoring program for 9th-grade students transitioning to high school, called Link Crew, which aimed to help 9th-grade students feel welcome and connected in their 1st year of high school. The program trains 11th- and 12th- grade students to be peer mentors to 9th-grade students to help them have a successful freshman year. Link Crew spans the entire freshman year, and includes a high school orientation, academic follow-ups, social follow-ups, and leader initiated contacts. There is also a school safety and antibullying component built in (Boomerang Project, 2011). Research suggests that schools that implemented the Link Crew program saw improvements in office referrals with a 37% decline, suspensions with a 20%

decline, absences with a 33% decline, and tardies with a 7% decline (Boomerang Analysis, 2011). There was also a 6% decrease in D and F grades among 9th-graders, and a 3% drop in the number of students who had failed one class or failed more than three classes (Boomerang Analysis, 2011). This was the 1st year the school used the Link Crew program. The Link Crew student leaders were trained for 20 hours during the summer and participated in freshman orientation. The Link Crew Leaders were trained to spend around 2 hours per month with their assigned students throughout the school year. It was reported that some peer leaders went above and beyond that requirement, while other peer leaders rarely met with their students. To better address these compliance issues and improve the support to freshman students, the program will reportedly expand in coming years and offer a class to students who are dedicated to being Link Crew Leaders. This class will provide more time to cultivate a positive culture, create leaders who can have a positive effect on students, and help the positive culture spread throughout the school.

Students receiving special education services were included in the sample of the current study. Special education is instruction and services that are specialized to meet the unique needs of a child with a disability (National Dissemination Center for Children with Disabilities, 2013). Services can range from a self-contained classroom/special school to only receiving special education services with a related service provider, such as an occupational therapist, school psychologist, or speech and language pathologist. Special education was created to ensure that individuals with disabilities received a free and appropriate education (FAPE) (U.S. Department of Education, 2004). Students who received special education services were included in the study because many students with a learning or social/emotional disability are at greater risk for dropout and school

disengagement (Deshler et al., 2001; Reschly & Christenson, 2006; Sabornie & deBettencourt, 2004). Furthermore, individuals with learning and social/emotional disabilities are more likely to have multiple risk factors (Wagner et al., 2006). Students who received special education services solely in the two self-contained special education classes due to significant intellectual disabilities and low reading abilities were excluded from the study because they did not have the skills necessary to comprehend the written study measures. Students receiving special education services whose skill level also permitted inclusion in the regular curriculum in history or English classes were included in the administration of the study measures.

Measures

Independent Variables

Participation Variables

Student Survey

A student survey was used to obtain self-report information regarding student participation in any extracurricular activities, at-risk, and special education programs. In addition to the number of different programs and activities students were involved in, students also reported on the duration of their participation in these activities. The Student Survey also collected demographic data and information on students' perception of adult mentors and other school-based supports in the school.

Observed Variables

The observed variables associated with the latent variable of *Participation* are any special education classes or other related services that students received, including AVID,

LIA, Study Skills, Math Lab, and/or Reading Class. These variables were treated as dichotomous variables. Students also reported the total number of hours they participated in either an extracurricular activity or at-risk/prevention program. The variable of time was going to be used if the dichotomous variables did not work well within the model. The time variable was treated as a continuous variable.

It should be noted that the entire 9th-grade class participated in the transition program, Link Crew; therefore, the secondary model considered 9th graders as a treatment group. Grade was treated as a dichotomous variable.

Demographic Variables

Participating students' gender, race/ethnicity, language spoken in the home, what middle school they attended, and socioeconomic status (SES) based on fee-waiver eligibility was collected using Skyward (1999 to present) and Data Dashboard. Skyward and Data Dashboard are electronic-based systems that the target school uses regularly to access student information. Student data were grouped by demographic information and the models were tested for group differences.

Dependent Variables

Student Engagement Variables

All students were assessed for their perceived level of school engagement during the Spring Semester (April) during the 2014-2015 school year using the Student Engagement Instrument (SEI; Appleton & Christenson, 2004). The spring administration was used to answer questions for the school-wide model. The perceived level of student engagement was also assessed in late January for 9th- and 10th-grade students. The

January and the spring administrations were used to answer the secondary research questions regarding the impact of the transition program by comparing 9th- and 10th-grade student data.

Student Engagement Instrument (SEI)

The Student Engagement Instrument (SEI) assesses a student's perceived level of engagement. The scale includes 35 items and six subscales. The six subscales are organized under two domains of engagement: *cognitive engagement* and *psychological engagement*. Cognitive engagement is self-regulation, being able to connect schoolwork to future goals, valuing learning, setting personal goals, and autonomy. The three subscales that load onto the cognitive engagement domain are: (1) control and relevance of schoolwork, (2) future goals and aspirations, and (3) extrinsic motivation. It should be noted, however, that the extrinsic motivation subscale was removed from the model analyses because it is only comprised of two items and can be problematic in data analyses (Appleton et al., 2006). Psychological engagement includes feelings of belongingness or identification with school and peers, and relationships with teachers and peers. It refers to engagement that is interpersonal in nature. The three subscales that load onto the psychological engagement domain are: (1) teacher-student relationships, (2) peer support for learning, and (3) family support for learning. Dr. Angie Pohl of the Check and Connect team at the Institute on Community Integration, University of Minnesota was consulted about the use of the SEI, as there is no accompanying manual; however, there are research articles outlining standardization and validation methods, as well as how to use the instrument. It should be noted that the researcher requested a Spanish version for ELL students, but there was not one available. Native Spanish speakers were used to

accurately translate the document to Spanish.

A study by Appleton et al. (2006) aimed to validate the SEI. The instrument was normed in a large, diverse, urban school district in the Midwest. The study included 9th-grade students, and of the 2,577 students selected for the study, 1,931 completed the SEI, which was about a 75% participation rate. The ethnic make-up of the sample was 40.4% African American (*n*=780), 35.1% White (*n*=677), 10.8% Asian (*n*=208), 10.3% Hispanic (*n*=199), and 3.5% American Indian (*n*=67). The gender numbers were about equal with girls making up 51% of the sample. There were 22.9% of the students who reported speaking another language in the home other than English, 61.4% qualified for free and reduced lunch, and 7.6% of the sample received services through special education. Appleton et al. (2006) used exploratory factor analysis and confirmatory factor analysis to find the best model fit. The validation study supported the six factors, but also reported that the extrinsic motivation factor should be further researched to better understand if it should be included in the model. The extrinsic motivation factor was removed for the current study, and a five-factor model was used. The factors correlated with expected educational outcomes.

Risk Variables

The study examined Early Warning Indicators (EWIs) of attendance, behavior, and academic records as the main at-risk indicators. Each EWI loaded onto the latent variable of *Risk*. Similar information was collected monthly throughout the study to assess for change over time, and correlations with engagement variables; however, the EWIs from the end of the school year were used to answer the primary research questions. This information was collected through a student database system (Skyward,

1999 to present), via Data Dashboard, which used the data collected from Skyward to create an EWS. This is the system that was already in use at the targeted high school. All EWI variables were analyzed as continuous variables.

Academic Achievement

To measure students' academic achievement as one of the indicators in the EWS, students' grades were collected through Skyward electronic records. The EWS criterion for academic achievement that was monitored monthly in the study was GPA. GPA was analyzed as a continuous variable from 0 to 4.0. Each student's GPA was averaged from October through June to determine an average GPA. This was used in place of number of failing grades because it was a richer continuous variable. Student GPAs in October, March, and June were used to help answer the secondary research questions regarding change in EWIs throughout the school year. After removing missing SEI cases, however, there were still missing data on the Mean GPA, and for the latent growth curve analysis October and March EWI outcome variables. The means were computed for the missing values using the series mean procedure in SPSS.

Behavior

To measure behavioral referrals as one of the EWIs, students' documented office discipline referrals (ODRs) and suspensions were collected through Data Dashboard and analyzed. The EWS criterion for behavior risk was based on the occurrence of ODRs, which were defined as any documented major behavior infractions by a teacher or administrator, and/or out-of-school or in-school suspensions for the current school year as documented on Skyward. Discipline referrals were treated as a continuous variable

ranging from 0 discipline referrals to the maximum documented on Skyward for the student for the year. The behavior information was gathered monthly from Data Dashboard from October through June. The final spring data collection was the cumulative number of ODRs throughout the school year, which was used as the main data point to assess for correlations with participation, engagement, and demographic variables to address the primary research questions. Student ODRs in October, March, and June were used to help answer the secondary research questions regarding change in EWIs throughout the school year.

Attendance

Data collected through Data Dashboard's electronic records were used to assess the EWI of attendance. Attendance was analyzed as a continuous variable ranging from 0 days missed to the maximum number of days a student missed school. Attendance information was collected every month from the fall through the spring. The final spring data collection was students' cumulative days absent, which acted as the main data point to assess for correlations with participation, engagement, and demographic variables to address the primary research questions. Student absences in October, March, and June were used to help answer the secondary research questions regarding change in EWIs throughout the school year.

Average Risk

Average risk was a variable that was created using the EWS. Each month students were assigned a risk level of "low risk," "at-risk," or "significant risk." The students who were labeled as "low risk" had no EWIs that met the threshold for at-risk. The students

who were labeled as "at-risk" had one EWI indicator that fell within the at-risk range. Students who were labeled "significant risk" had two or more EWIs that fell within the at-risk range. The average risk level is comprised from averaging each month from October through June.

Procedures

The whole school student body was included in the study. All participating students were administered the SEI and Student Survey in the spring (May/June). Participating 9th- and 10th-grade students were administered the SEI on two occasions: once in January prior to the all-school administration in the spring (May/June). SEI administrations occurred during the students' history classes for 9th-, 10th-, and 11th-graders and in either history, government, or English classes for 12th-grade students. The spring administration was used to answer the main research questions, and both administrations were used to answer the secondary research questions that focused on assessing the impact of the 9th-grade transition program.

A self-report survey (Student Survey) was also administered to all students in the spring (April). The self-report survey gathered demographic information, student involvement in school-based extracurricular activities and at-risk prevention and intervention programs, and perceptions about mentors and school-wide supports in their school. A comprehensive list of available school-based at-risk programs and other school-based extracurricular activities was compiled to ensure that students had a complete list of programs in the Student Survey to select from.

Students who missed the in-class administration times were called down to complete the measures at a later date. Only one additional attempt was made to gather

this information. The SEI and student survey were administered electronically via desktop or laptop computers using the Data Dashboard system or the students had the option to take the survey on their cell phones. Most of the students in the classrooms had access to a cell phone. This system allowed the collected data to be easily exported to an Excel spreadsheet, and easily identified those students who did not complete the survey. This data collection process also helped to ensure confidentiality since only student numbers were linked to completed surveys.

Data on EWI variables were collected monthly from fall (October) through the end of the school year (June). It is important to note that the EWI variables collected at the end-of-year (June) data collection were used as the dependent variable to measure student performance for many of the research questions. The results from the SEI variables collected at the initial January and final Spring data collection point were used to assess for change in student engagement for 9th- and 10th-grade students. The monthly data collection of EWI variables helped to answer research questions regarding change/improvement throughout the school year. The study also analyzed correlations between student engagement, EWI variables, participation in school-based dropout at-risk/prevention programs, school-wide programs and supports, and demographic information.

Student engagement researchers have found that active parental consent could potentially cause a positive engagement bias because the parents who likely would not return forms may be the same parents of students who are disengaged and more likely to dropout (Reschly et al., 2008). For this reason, passive consent was sought via letters distributed to families of all 9th- and 10th-grade students in December, and to families of

all 11th- and 12th-grade students in April. A total of nine parents/guardians opted to have their child not participate in the study.

Study Design

Structural Equation Modeling (SEM) was used to assess relationships between the independent variables (IVs) and the dependent variables (DVs). SEM encompasses a group of statistical techniques that allow a number of relationships to be explored simultaneously (Ullman, 2013). This method was chosen because the study aimed to examine the predictive relationships of the latent variables: participation, student engagement, and EWI variables. SEM is a useful technique to help answer more conceptual and complex hypotheses about social and behavioral science concepts. There are generally no other accepted methods that help to answer questions about broad concepts besides SEM (Blunch, 2013).

Prior to running the structural models, the hypothesized models were tested for goodness-of-fit. This means the data were tested for how well the data fit the model. If the data did not fit the model well, alterations were made based on the modification indices and knowledge about the data and prior research. The fit indices were reported for each model. The fit indices that were reported were chi-square (X^2), degrees of freedom (*df*), relative/normed chi-square (X^2/df), comparative fit index (CFI), normed fit index (NFI), root mean square error of approximation (RMSEA), and confidence intervals (CI) for RMSEA. X^2 evaluates the overall model fit, and assesses for discrepancies between the sample and covariance matrices; however, X^2 can be somewhat limiting because it is highly impacted by sample size. Therefore, it is important to incorporate *df*, which is *n*-1, because it takes into account the number of classes and sample size. X^2/df is the

measurement that accounts for sample size. The CFI compares the X^2 of the model with the X^2 of the null model. The NFI essentially does the same thing as the CFI; however, the NFI takes into account sample size. The RMSEA measures how well the model fits considering the number of parameter estimates with the population covariance matrix. The structural models with the best fit were chosen, and were used to answer the research questions. For the main research questions, a second prevention model was created due to fit issues, and the possibility that at-risk programs and prevention programs have different students participating and should be interpreted separately.

The models that were analyzed specifically looked at the relationship of participation in school-based interventions and prevention programs with level of student engagement and improvement on EWI risk variables. A number of different paths in the model were explored to test specific relationships. Also, multigroup analyses were conducted to analyze outcomes for different demographic groups, especially grade. The study included a large number of independent and dependent variable relationships. SEM helped to accommodate the large number of relationships, and allowed for examination of the different relationships and groups at the same time (Ullman, 2013).

The first model that was created addressed the research question focusing on whether or not school staff are identifying at-risk students and placing them in appropriate supports. This model can be seen in Figure 1. The main model that was specifically tested was the hypothesis that participation in at-risk prevention will increase the level of psychological and cognitive student engagement, which will then improve performance on EWI variables. The Main At-Risk Structural model can be viewed in Figure 2. The Main At-Risk model only included at-risk programs. Another model was

created that only included the prevention programs, and this model can be viewed in Figure 3. Essentially, these models addressed a number of different questions about the relationships among variables, and allowed for multiple regression analyses of factors. EWI variables and SEI data were treated as continuous variables, and demographic and participation data were treated as a dichotomous variable or as separate groups. Furthermore, to address differences in grade, a latent growth curve analysis was completed that was mediated by grade. This assessed for change in EWI variables over the course of the school year. The structural model is different for each one of the analyses based on EWI. The model for Days Absent is Figure 4, for ODRs is Figure 5, and for GPA is Figure 6. Means also were analyzed for group differences, as well as regression weights for the main relationships. A separate model was created that removed the variable of Participation to better understand the impact of demographic variables on student engagement and EWIs. This model can be viewed in Figure 7.

There was a risk of treatment related attrition because students who are at high risk for dropping out may in fact have dropped out of school or left school for any number of reasons before data collection in the Spring. This primarily impacted the secondary research questions addressing the effectiveness of the transition program because the main data point for the primary research questions was the Spring administration of the SEI and Student Survey. Students who dropped out before the Spring data collection point were therefore not included in the analyses. To simplify analyses and answer the secondary research questions, only 9^{th}- and 10^{th}-grade students who participated in both the January and Spring data collections were included in the latent growth curve analyses.

Table 1

Demographic Characteristics of Sample 1 (All Grades)

	Frequency	Percentage
Student Participants (*N*=1314)		
Ethnicity		
White	945	71.9%
Hispanic	130	9.9%
Black	26	2.0%
Asian	25	1.9%
Pacific Islander	25	1.9%
American Indian	6	0.5%
Other	28	2.1%
Multiracial	129	9.8%
Gender		
Male	693	52.7%
Female	621	47.3%
Grade		
9th	328	25.1%
10th	378	28.8%
11th	336	25.6%
12th	272	20.7%
Special Education		
Special Education Services	108	8.2%
No Special Education Services	1206	91.8%
English Language Learner (ELL)		
ELL	57	4.3%
Non-ELL	1257	95.7%
Middle School (*N*=1239)		
Middle School 1	535	43.2%
Middle School 2	278	22.4%
Middle School 3	19	1.5%
Middle School 4	18	1.5%
Middle School 5	4	0.3%
Middle School 6	39	3.1%
Middle School 7	26	2.1%
Middle School 8	10	.8%
Outside of School District	171	13.8%
More than one Middle School	139	11.2%

Table 1 continued

Low Income (*N*=916)		
Low Income	248	27.1
Not Low Income	668	72.9
Risk Level		
Low Risk	661	50.3
At-Risk	369	28.1
Significant Risk	284	21.6
Participation		
Reading Class	23	1.8
Math Lab	94	7.2
Study Skills	72	5.5
Special Education	108	8.2
LIA	51	3.9
AVID	111	8.4

Table 2

Demographic Characteristics of Sample 2 (9th and 10th Grades)

	Frequency	Percentage
Student Participants (*N*=596)		
Ethnicity		
White	405	68.0%
Hispanic	77	12.9%
Black	14	2.3%
Asian	10	1.7%
Pacific Islander	11	1.8%
American Indian	4	0.7%
Other	14	2.3%
Multiracial	61	10.2%
Gender		
Male	318	53.4%
Female	278	46.6%
Grade		
9th	263	44.1%
10th	333	55.9%
Special Education		
Special Education Services	48	8.1%
No Special Education Services	548	91.9%
English Language Learner (ELL)		
ELL	32	5.4%
Non-ELL	564	94.6%
Middle School		
Middle School 1	276	46.3%
Middle School 2	137	23.0%
Middle School 3	11	1.8%
Middle School 4	6	1.0%
Middle School 6	12	2.0%
Middle School 7	13	2.2%
Middle School 8	4	.7%
Outside of School District	85	14.3%
More than one Middle School	52	8.7%
Low Income (*N*=301)		
Low Income	100	33.2
Not Low Income	201	66.8

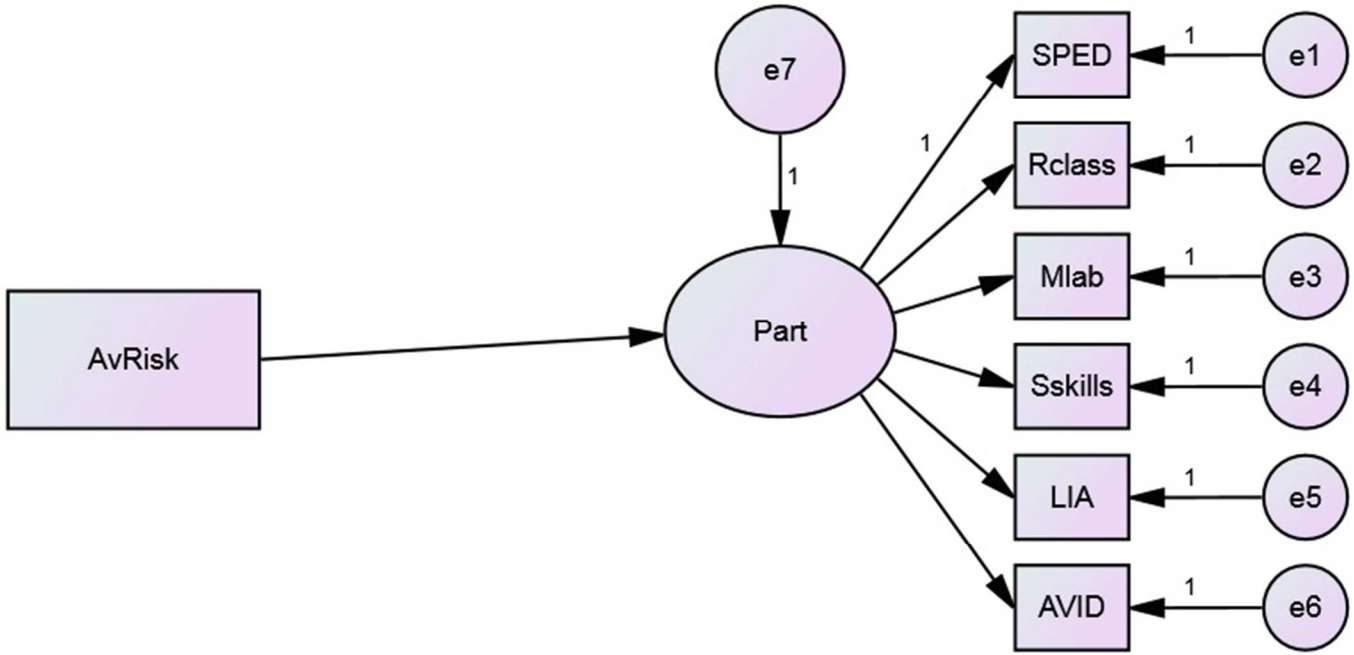

Figure 1 Structural Model for At-risk Participation

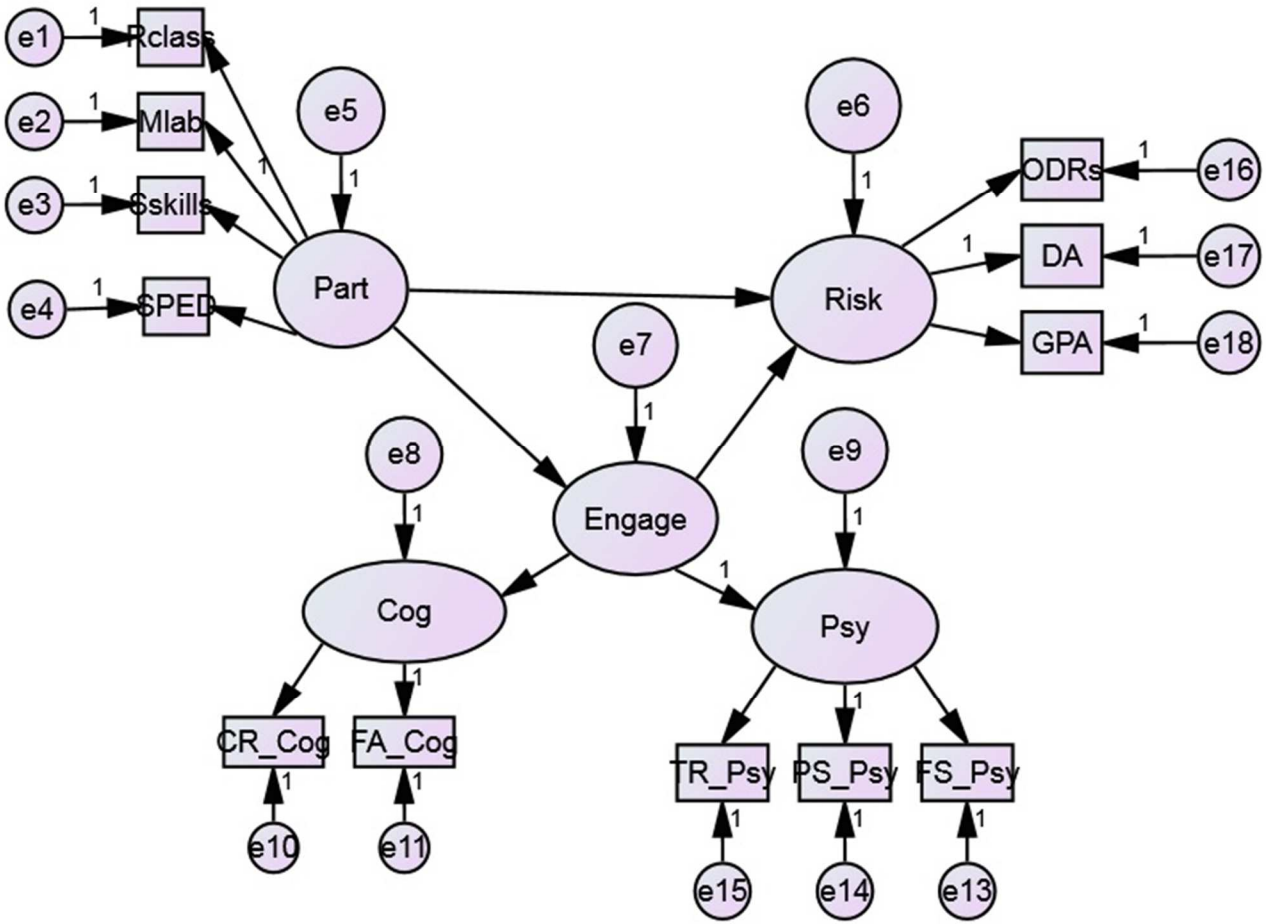

Figure 2 Main At-Risk Structural Model

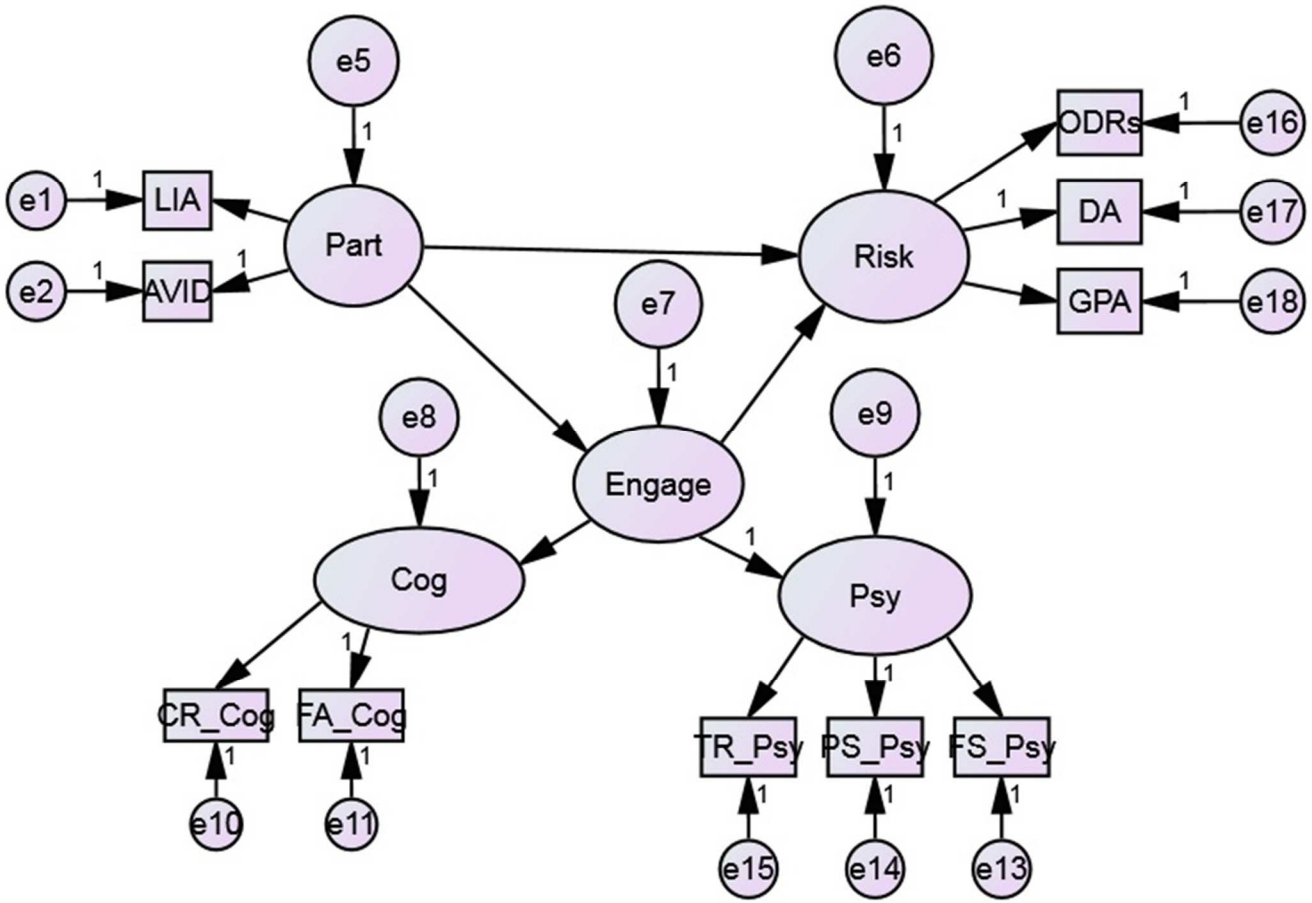

Figure 3 Main Prevention Structural Model

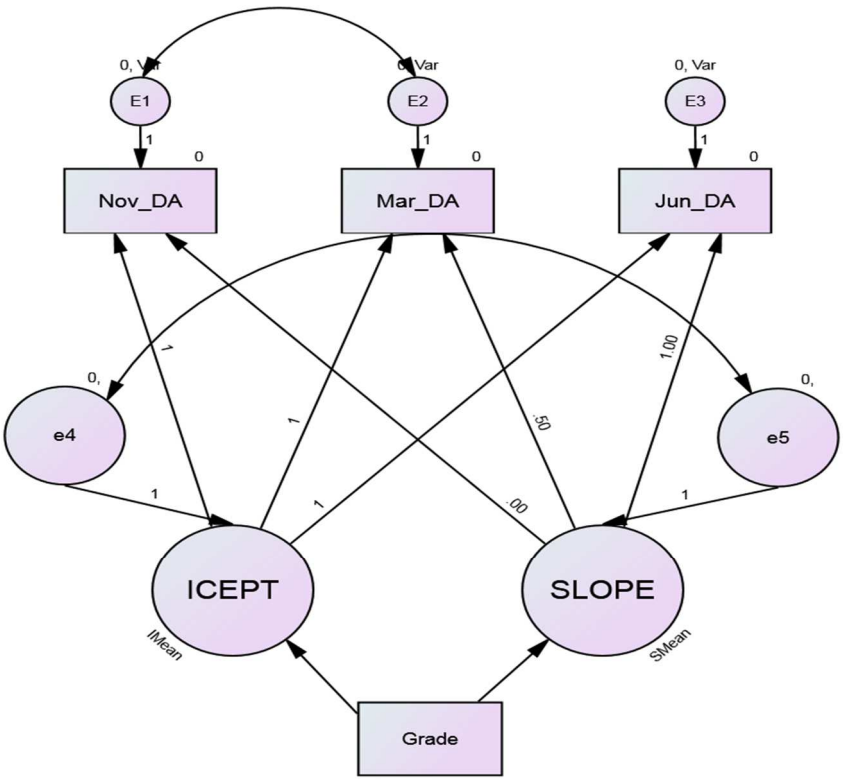

Figure 4 Conditional Latent Growth Curve Analysis: Days Absent

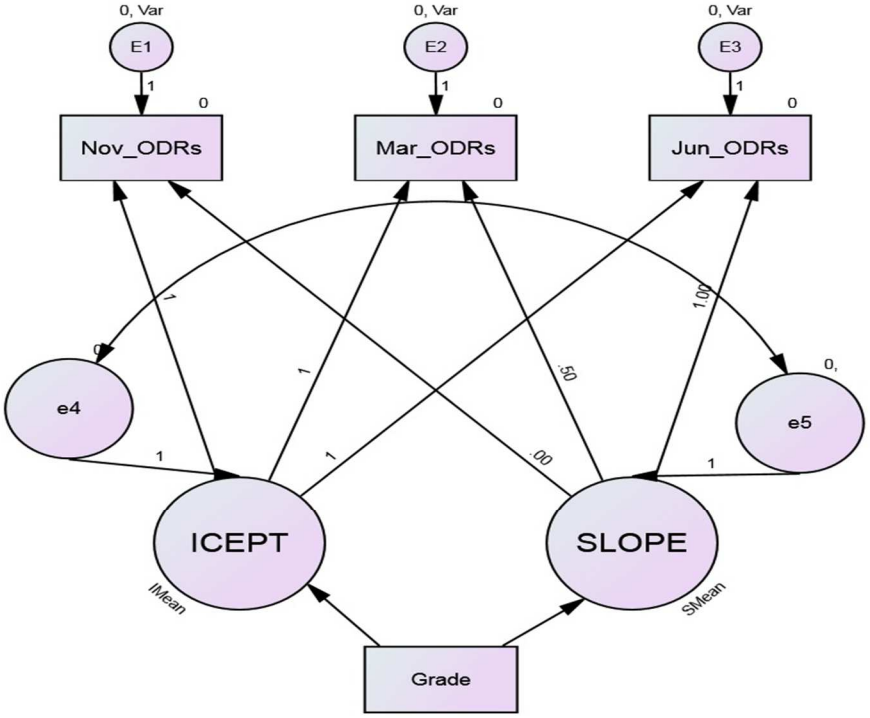

Figure 5 Conditional Latent Growth Curve Analysis: ODRs

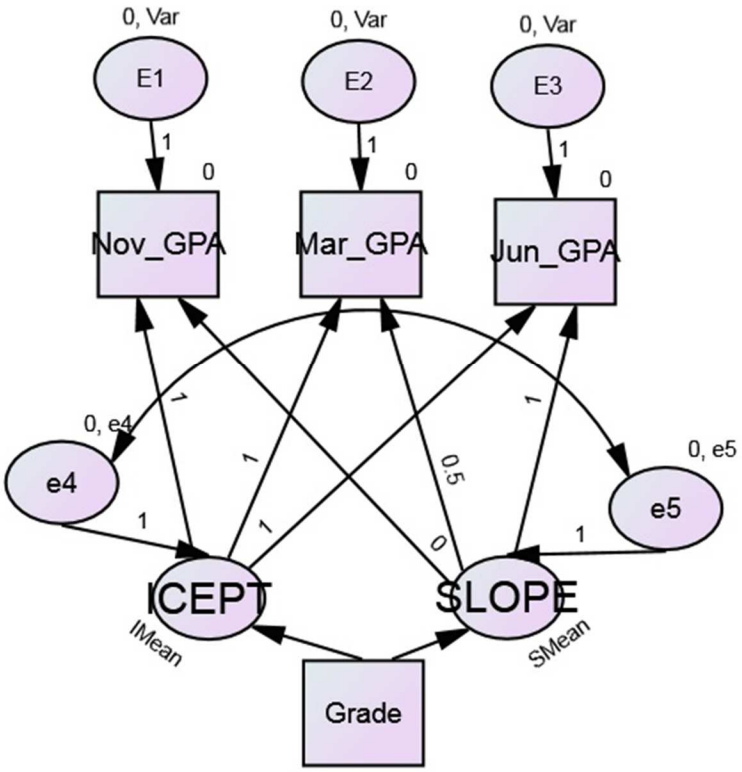

Figure 6 Conditional Latent Growth Curve Analysis: GPA

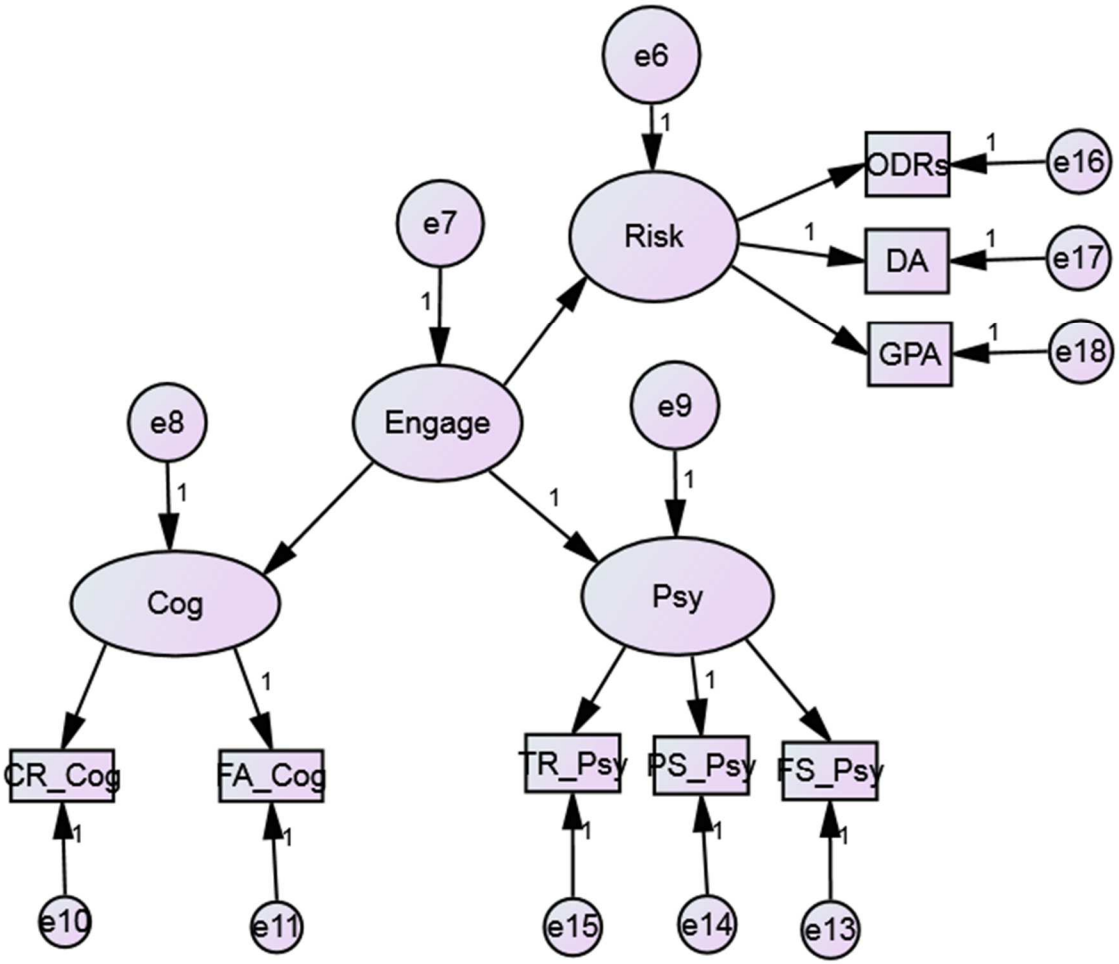

Figure 7 Secondary Research Questions 6 and 7 Structural Model

CHAPTER 3

RESULTS

Descriptive Statistics

The current study investigated the relationships between student participation in at-risk and prevention programs, student engagement variables, and EWI variables. There were two data collection points; the first with all grades, 9th through 12th (Sample 1) and the second with only 9th- and 10th-grade students (Sample 2). A sample also was created for analysis purposes, consisting of data from 9th- and 10th-grade students who completed both administrations. SPSS was used to analyze the demographic information about the two student samples. The two samples were *N*=1,314 for Sample 1 and *N*=596 for the combined 9th- and 10th-grade sample (Sample 2).

Inferential Statistics

The statistical program SPSS AMOS (Analysis of Moment Structures) was used to estimate parameter values and to compute statistical results for analysis. The variable codes for parameters are presented in Table 3 to help the reader to more easily follow the path diagrams. For each question, the structural model used will be described. It should be noted that each model may have had models named Model 1, Model 2, or Model 3 to demonstrate adjustments made to create new models with better fit based on the initial hypothesized model.

Sample Characteristics

A test of normality was performed on all seven models in AMOS on each hypothesized model. The assessment of normality looked for overall multivariate normality and univariate kurtosis values >7.0. To assess for outliers, the Mahalanobis *d*-squared measure was analyzed to see if any values significantly differed from others in the sample. Kurtosis assesses for tails and peaks on a variable that differ from the multivariate normal distribution (Raykov & Marcoulides, 2000). The tests showed that some of the variables were not normally distributed in all of the models. The specific normality data for each model are reported below and in the *Secondary Research Questions* section.

Using the Structural Model for Research Question 1, LIA, Sskills, MLab, Rclass, and SPED all had kurtosis values >7.0. The univariate kurtosis values ranged from -1.052 to 52.148, and there was a mean univariate kurtosis of 15.493. The multivariate normality using Mardia's (1970) normalized estimate of multivariate kurtosis was 148.774 with a critical ratio (CR) of 240.220. Bentler (2005) suggests that, in practice, scores >5.00 indicate scores that are nonnormally distributed. The Mahalanobis *d*-squared measure did not reveal significant outliers.

Using the Main At-Risk Model for Research Questions 2, 3, and 4, SPED, ODRs, Rclass, Mlab, Sskills, and LIA all had kurtosis values >7.0. The univariate kurtosis values ranged from -1.052 to 170.909, with a mean univariate kurtosis of 18.079. The multivariate normality using Mardia's (1970) normalized estimate of multivariate kurtosis was 430.212 with a CR of 304.502. This indicates nonnormality. The Mahalanobis *d*-squared measure did reveal two significant outliers and the outliers were

checked in the data for any abnormalities. The data were determined to be accurate and both cases included students who had significant elevations on EWI variables, indicating significant risk and therefore, were kept in the sample.

The data used in the Structural Model for all of the adjusted models were non-normally distributed; therefore, a bootstrapping procedure was performed in AMOS on all of the models. The bootstrapping procedure essentially takes the study samples, and creates multiple subsamples using the original sample data. This allows an examination of parameter distribution based on the repeated samples. This method is more concrete than using one sample to draw assumptions about a population. Formulas used to analyze one sample are linked to assumptions of normality, while the bootstrapping technique does not have this restriction (Bryne, 2010). The number of bootstrap samples that were chosen for each model was 500 with 90% confidence intervals, using the ML estimator.

Results for Research Question 1

The first research question addressed whether students who were identified as "at-risk" or at "significant risk" through an Early Warning System (EWS) are the same students who are connected with school-based supports and at-risk programs. The first step in answering this question was testing the hypothesized Structural Model for Research Question 1 (Research Question 1 Model 1) for goodness-of-fit. The test showed that there were fit problems, and the modification indices were reviewed for appropriate changes. The changes made and included in Research Question 1 Model 2 were drawing covariances between e1 with e3 and e6; e2 with e3 and e5; and e5 with e6. It makes sense to draw the covariances because there were many students who participated in more than one at-risk/prevention class. It is important to note that the correlations between error

terms indicate that they have something in common other than the latent variable. The covariances significantly improved model fit. The X^2/df fell within acceptable limits of $X^2/df \leq 5.00$ at 2.506. The CFI and NFI both significantly improved and were near the acceptable limits of ≥ .950. The RMSEA also fell in the range of acceptability (>.05 to .08). Although the model fit was acceptable there were still variables with very low regression weights, meaning the slope of the relationship between the measured variable and the latent variable was minimal. See Table 5 for the regression weights with bootstrapping confidence intervals (CI) and adjusted *p*-values, which were used to help answer Research Question 1. The highest regression weight for Participation was Sskills ($\beta = .688$, $p < .001$) with a CI of .556 to .867 ($p = .005$). This means that students who were identified as at-risk and who participated in an at-risk program were more likely to be involved in Study Skills than other at-risk and prevention programs. Conversely, AVID had the lowest regression weight ($\beta = .094$, $p = .016$) with a CI of .021 to .200 ($p = .024$). Overall, students who were identified as being more at-risk were more likely to be identified and placed in an at-risk/prevention program ($\beta = .255$, $p < .001$) and the CI was .175 to .332 ($p = .002$).

Post-hoc Analysis

To improve fit, the two regression weights that were the lowest were removed from the model: LIA and AVID. LIA and AVID are prevention programs, rather than at-risk programs, which may be the reason for the lower regression weights. Only at-risk programs remained in Research Question 1 Model 3. Prior to removing these variables, the standardized residual covariance matrix was referenced to see if the covariance value was significantly greater than 0.4. Both LIA and AVID had some covariance values

significantly above the 0.4 cut-off. The modification indices were checked again for changes that could potentially improve the fit of the data. There were no additional modifications. The X^2/df fell within acceptable limits of $X^2/df \leq 5.00$ at 3.404. The CFI and NFI both significantly improved and were near the acceptable limits of $\geq .950$. The RMSEA also fell in the range of acceptability (>.05 to .08); however, removing LIA and AVID did not significantly change the standardized regression estimates. Therefore, Research Question 1 Model 2 was determined to be the best model to answer Research Question 1 and the best fit with the data. The fit indices for Research Question 1 Models 1, 2, and 3 are presented in Table 4.

Results for Research Question 2

The second research question addressed whether participation in school-based supports and at-risk programs resulted in an increase in students' self-report of cognitive and psychological engagement and/or any of the specific factors that loaded onto each type of engagement. The factors on the cognitive engagement scale of the SEI were Future Aspirations and Goals, and Control and Relevance. The factors that were on the psychological engagement scale of the SEI were Student-Teacher Relationships, Peer Support for Learning, and Family Support for Learning. The Main At-Risk Model was used to answer Research Question 2.

The first step in answering this question was testing the hypothesized Main At-Risk Structural Model (Main At-Risk Model 1) for goodness-of-fit. The test showed that there were problems with fit, and the modification indices, and covariance matrices were reviewed for appropriate changes. LIA and AVID were removed because they were much lower than the other factors on Participation. It should be noted that LIA and AVID are

prevention programs, and this could be the reason they did not load well compared to the at-risk programs. For this reason, a prevention model was explored in post-hoc analyses. Risk Level (Avrisk) based on all three EWI variables was also removed from the model even though it loaded almost exactly onto Risk with a regression weight of .961. A review of the covariance matrices revealed that many of the covariances were well above the acceptable limit of .4. Another reason why the Risk Level (Avrisk) factor was removed was that the factor was essentially equivalent to combining all of the EWI factors on the Risk scale. Additional changes to the model were covariances drawn between e1 with e2 and e3; e2 with e4; e10 with e14; and e11 with e13. These changes significantly improved model fit. The X^2/df fell within acceptable limits of $X^2/df \leq 5.00$ at 4.921. The CFI and NFI both significantly improved and were within acceptable limits of $\geq .950$. The RMSEA also fell in the range of acceptability (>.05 to .08). The Main At-Risk Model: Model 2 was used for analyzes because it had the best fit. The fit indices for each model are reported in Table 6.

Bootstrapping was completed to address sample nonnormality. See Table 7 for regression weights with bootstrapping confidence intervals (CI) and adjusted *p*-values, which were used to help answer Research Question 2. The Main At-Risk Model (Model 2) suggests that participation in at-risk programs does not increase student's self-report of student engagement ($\beta = -.047$, $p=.189$), with a CI of -.108 to .019 ($p = .233$). Since the relationship was not significant, direct relationships between each of the factors on the cognitive and psychological engagement scales were not explored; however, further post-hoc analyses were completed to explore if the same was true for the prevention programs of LIA and AVID. The regression weights are reported in Table 7. The total effects are

reported in Table 8, and they show that none of the total effects for Research Question 2 were significant.

Pot-hoc Analysis

A Main Prevention Model (Main Prevention Model: Model 3) was explored because there seemed to be a difference between how the factors LIA and AVID were loading on Participation compared to the at-risk programs. It was hypothesized that the relationship of participation in prevention programs with students' self-report of engagement could potentially be better analyzed in a separate model. Main Prevention Model (Model 3) was created to explore the effects of prevention programs on engagement and risk (EWIs). The model was first checked for goodness-of-fit; however, there were no additional modifications that could be made to improve fit in order to be able to answer the research question. The X^2/df fell near within acceptable limits of $X^2/df \leq 5.00$ at 6.073. The CFI and NFI both were close to the acceptable limits ≥ .950. The RMSEA also fell within the range of acceptability (>.05 to .08). There were significant differences between the Main Prevention Model with LIA and AVID (Main Prevention Model: Model 3), and the Main At-Risk Model with SPED, SSkills, MLab, and Rclass (Main At-Risk Model: Model 2). Analyses using Main Prevention Model (Model 3) suggested that participation was significantly positively correlated with students' self-reported engagement ($\beta = .131$, $p=0.046$) and the CI was .027 to .271 ($p = .049$). Since there was a significant relationship between participation and engagement, the specific relationship between participation and each of the factors for cognitive and psychological engagement was explored. These regression weights are reported in Table 9.

The standardized total effect is a regression weight used to analyze the

relationship strength and direction between variables (see Table 10). The standardized total effect between participation in prevention programs and the cognitive engagement factor of Future Aspirations and Goals was β = .065, with a CI of .013 to .152 (p=.046). The standardized total effect between participation in prevention programs and the cognitive engagement factor of Control and Relevance was β = .100, with a CI of .022 to .230 (p= .044). Both of these correlations are small, but they are significant and positive. The standardized total effect between participation in prevention programs and the psychological engagement factor of Student-Teacher Relationships was β = .123, with a CI of .025 to .238 (p= .050). The standardized total effect between participation in prevention programs and the psychological engagement factor of Peer Support for Learning was β = .100, with a CI of .020 to .188 (p= .054). The standardized total effect between participation in prevention programs and the psychological engagement factor of Family Support for Learning was β = .080, with a CI of .017 to .154 (p= .049). All of these correlations are small, but they are all positive and the total effects between participation and the Student-Teacher Relationships and Family Support for Learning factors were statistically significant. See Table 10 for the post-hoc total effects with bootstrapping confidence intervals (CI) and adjusted p-values, which were used to help answer Research Question 2.

Results for Research Question 3

The third research question focuses on the relationship between students' self-reported level of cognitive and psychological engagement and specific Early Warning Indicators. The first step in answering this question was to refer back to the Main At-Risk Model (Model 2), which was determined to have the best model fit and was used in the

previous research question, to determine if there was a significant correlation between students' self-reported engagement and their overall Risk, which encompasses the three EWI variables. The Main At-Risk Model (Model 2) suggested that student engagement was negatively correlated with student risk (β = -.253, p=>0.001), with a CI of -.335 to -.118 (p = .001). Since the direct effect between Engagement and Risk was significant, the total effects between engagement and each of the EWIs was explored (see Table 8). The standardized total effect between students' cognitive and psychological engagement and GPA was β = .187, with a CI of 145 to .249 (p = .001). This indicates that there is a slight positive relationship between engagement and GPA. The standardized total effect between students' cognitive and psychological engagement and days absent was β = -.099, with a CI of -.144 to -.070 (p = .001). This indicates a slight negative relationship between reported engagement and days absent (i.e., as attendance increases, positive relationship with engagement). The standardized total effect between students' cognitive and psychological engagement and discipline referrals was β = -.113, with a CI of -.162 to -.074 (p = .002). This indicates a slightly negative relationship between reported engagement and office discipline referrals (i.e., as there are less office discipline referrals, positive relationship with engagement) All of the total effects were significant.

Post-hoc Analysis

The same Main Prevention Model (Model 3) that was used in Research Question 2 was also analyzed to see if there was a difference in the relationship between engagement and risk. For Research Question 3 the analysis revealed similarities between Model 3 (with LIA and AVID) and Model 2 (only at-risk programs included) Analyses using Model 3 suggested that engagement was significantly negatively correlated with

students' overall Risk (β = -.311, p< .001), with a CI of -.416 to -.216 (p = .002) (see Table 9). Since there was a significant relationship between engagement and overall Risk, the specific relationship between cognitive and psychological engagement with each EWI was explored.

The standardized total effect between engagement and GPA was β = .237, with a CI of .117 to .300 (p= .003). This indicates that there was a slightly more positive relationship between engagement and GPA for the Main Prevention Model (Model 3) compared to the Main At-Risk Model (Model 2). The standardized total effect between engagement and days absent was β = -.130, with a CI of -.198 to -.079 (p= .001). This indicates that there is a slightly more negative relationship between engagement and days absent for the Main Prevention Model compared to the Main At-Risk Model. The standardized total effect between engagement and office discipline referrals was β = -.125, with a CI of -.194 to -.072 (p= .002). This indicates that there is a slightly more negative relationship between engagement and discipline referrals for the Main Prevention Model compared to the Main At-Risk Model; however, all of these differences are small. The total effects for the prevention model can be found in Table 10.

Results for Research Question 4

The fourth research question focused on whether participation in school-based supports and at-risk programs correlate with improvement on Early Warning Indicator (EWI) variables. The first step in answering this question is to refer back to the Main At-Risk Model (Model 2) to determine whether there was a significant correlation between Participation and Risk, which encompasses the three EWI variables. The Main At-Risk Model suggested that participation in at-risk programs is positively correlated with

student risk (β = .537, *p*=>0.001), with a CI of .426 to .637 (*p* = .008). Since the direct effect between Participation and Risk was significant, the total effects between Participation and each of the EWIs were explored. The standardized total effect between participation in at-risk programs and GPA was β = -.405, with a CI of -.469 to -.341 (*p*= .006). This indicates that there is a negative correlation between participation in at-risk programs and GPA. The standardized total effect between participation in at-risk programs and days absent was β = .215, with a CI of .169 to .263 (*p*= .003). This indicates a positive relationship between participation in at-risk programs and days absent. The standardized total effect between participation in at-risk programs and Office Discipline Referrals (ODRs) was β = .244, with a CI of .159 to .321 (*p*=.009). This indicates a positive relationship between participation in at-risk programs and office discipline referrals. The correlations between Participation and each of the risk indicators (EWIs) were the opposite of what was predicted. A post-hoc analysis of the Main Prevention Model (Model 3) was conducted to better understand the findings for Research Question 4. Multigroup analyses also were conducted, and reported in the Secondary Research Questions section to better understand if these relationships differed between groups.

Post-hoc Analysis

The Main Prevention Model (Model 3) used for post-hoc analyses of Research Questions 2 and 3 was also analyzed to determine whether there was a difference in the relationship between Participation and Risk for students who participated in prevention programs (LIA and AVID). For this research question the post-hoc analysis revealed similarities, as well as differences, between Model 3 (with LIA and AVID), and Model 2

(at-risk programs only). Analysis of Model 3 suggested that Participation was significantly positively correlated with Risk, ($\beta = .259$, $p = .011$) with a CI of .152 to .420 ($p = .002$). Since there was a significant relationship between participation and risk, the specific relationships between participation and each EWI were explored.

The standardized total effect between Participation and GPA was $\beta = -.167$, with a CI of -.279 to -.075 ($p = .003$). This indicates that there is a slightly less negative relationship between participation and GPA for the Main Prevention Model (Model 3) compared to the Main At-Risk Model (Model 3). The standardized total effect between Participation and Days Absent was $\beta = .092$, with a CI of .056 to .173 ($p = .000$). This indicates that there is a slightly less positive relationship between participation and days absent for the Main Prevention Model compared to the Main At-Risk Model. The standardized total effect between Participation and Office Discipline Referrals (ODRs) was $\beta = .088$, with a CI of .053 to .154 ($p = .001$). This indicates that there is a slightly less negative relationship between Participation and ODRs for the Main Prevention Model compared to the Main At-Risk Model; however, all of these differences were small. The total effects are found in Table 8 and Table 10.

Secondary Research Questions

The secondary research questions were posed to assess the 9th-grade transition program called Link Crew. The 9th- and 10th-grade sample that included both data collections (January and Spring) was used to answer Research Question 5. Ninth-grade was treated as the treatment group, and 10th grade the no treatment group.

Research Question 6 aimed to examine changes in student engagement from fall to spring for the 9th-grade class, using the 10th-grade class as a comparison. Change over

time could not be assessed for student engagement, however, because the first data collection took place in January, instead of October, as initially proposed. This did not leave much time for students' self-report of engagement to change. Additionally, a latent growth curve analysis to assess for change over time for the student engagement variables could not be conducted because a minimum of three data points was needed. Instead, Research Question 6 was answered similarly to Research Question 7. These two analyses looked at differences in student engagement and EWI variables based on grade, specifically whether 9th-graders performed better on these outcome variables than 10th-graders because they participated in the Link Crew transition program. These analyses did not require multiple data points. Therefore, the Main At-Risk Model (Model 2) was used.

Secondary Research Question 8 addressed group differences for the entire sample (9th-, 10th-, 11th-, and 12th-grade students) based on demographic variables, such as race, SES, gender, grade, and middle school of origin. ELL status was proposed as another variable to assess for group differences; however, there were not enough students identified as ELL to successfully examine between group differences. For Research Question 8, the Main At-Risk Model (Model 2) was used to assess for group differences. The sample characteristics for the Main At-Risk Model (Model 2) have been reported previously; including normality characteristics for each model and bootstrapping was used.

Secondary Research Question 5: Sample Characteristics

For Research Question 5, three models were created to address each EWI (GPA, days absent, ODRs). Each model was assessed for normality and outliers. The model

examining GPA was assessed and all kurtosis values were below the threshold of >7.0. The univariate kurtosis values ranged from -1.944 to .842 with a mean univariate kurtosis of -0.065. The multivariate normality using Mardia's (1970) normalized estimate of multivariate kurtosis was 551.594 with a CR of 971.834, indicating nonnormality. The Mahalanobis *d*-squared measure revealed two significant outliers and the outliers were checked for any abnormalities. The data were accurate; both cases included students who consistently had high GPAs, but were within normal limits and did not appear different from other high achieving students. A bootstrapping procedure was used since some of the indicators revealed issues with normality.

The model examining Days Absent was assessed and there were kurtosis values over the threshold of >7.0. The univariate kurtosis values ranged from -1.944 to 13.718, with a mean univariate kurtosis of 6.663. The multivariate normality using Mardia's (1970) normalized estimate of multivariate kurtosis was 37.760 with a CR of 66.528, indicating nonnormality. The Mahalanobis *d*-squared measure did not reveal any outliers. A bootstrapping procedure was used since some of the indicators revealed issues with normality.

The model examining ODRs was assessed and there were kurtosis values over the threshold of >7.0. The univariate kurtosis values ranged from -1.944 to 171.255, with a mean univariate kurtosis of 100.258. The multivariate normality using Mardia's (1970) normalized estimate of multivariate kurtosis was 235.819 with a CR of 415.481, indicating nonnormality. The Mahalanobis *d*-squared measure revealed three outliers; however, when the data were checked for accuracy only one of the cases appeared much different from the remaining data. This student consistently had a high number of ODRs,

but was kept in the analysis. A bootstrapping procedure was used since some of the indicators revealed issues with normality.

The data used in all three of the models were nonnormally distributed; therefore, a bootstrapping procedure was performed in AMOS on all of the models. As with the main research questions, the number of bootstrap samples that were chosen for each model was 500 with 90% confidence intervals, using the ML estimator.

Secondary Research Question 6 and 7: Sample Characteristics

In Research Questions 6 and 7, a new model was created to assess for differences between 9th- and 10th-grade students on engagement and risk without the variable of at-risk participation. The model for each group was assessed for normality and outliers. The model for 9th-graders was assessed and there were kurtosis values above the threshold of >7.0. The univariate kurtosis values ranged from -.083 to 85.432, with a mean univariate kurtosis of 10.643. The multivariate normality using Mardia's (1970) normalized estimate of multivariate kurtosis was 118.817 with a CR of 76.463, indicating nonnormality. The Mahalanobis *d*-squared measure revealed two significant outliers and the outliers were checked in the data for any abnormalities. The data were accurate and both cases were included in the analysis. The model for 10th-grade students was assessed and there were kurtosis values above the threshold of >7.0. The univariate kurtosis values ranged from -.163 to 25.582, with a mean univariate kurtosis of 3.789. The multivariate normality using Mardia's (1970) normalized estimate of multivariate kurtosis was 51.073 with a CR of 35.283, indicating nonnormality. The Mahalanobis *d*-squared measure did not reveal outliers. A bootstrapping procedure was used since some of the indicators revealed issues with normality.

Results for Research Question 5

Research Question 5 focuses on the 9th-grade students who participated in the Link Crew transition program. The question explored whether the 9th-grade student transition program resulted in improvement in EWI variables. The 10th-grade class was used as a comparison because they did not have the Link Crew program the year prior.

The first step in answering this question was testing the hypothesized model (GPA Model) for goodness-of-fit. The test showed that there were slight problems with fit, and the modification indices, covariance matrices, and regression weights were reviewed for appropriate changes. The model could not be changed, however, because each of the factors needed to remain in the model to answer the research question and maintain the minimum number of data points for a latent growth curve. Also, no covariance could be drawn. The X^2/df fell well above the acceptable limits of $X^2/df \leq 5.00$ at 1223.275. The CFI and NFI were both around the acceptable limits $\geq .950$. The RMSEA fell slightly above the range of acceptability (>.05 to .08), but was within reasonable limits. The fit indices are reported in Table 12.

Bootstrapping was completed to address sample nonnormality. See Table 13 for the regression weights with bootstrapping confidence intervals (CI) and adjusted *p*-values, which were used to help answer Research Question 5. These results should be interpreted with some caution due to fit issues. This suggests that there is substantial covariation between exogenous variables that is not explained in the model. It is also important to note that this model is conditional, meaning the results are contingent on a variable, in this case grade. The hypothesized conditional latent growth curve model suggested that grade did not have a significant impact on the slope ($\beta = .017$, $p=.799$) or

intercept (β = -.008, *p*=.811) of GPA. The slope significantly increased from November (β = .000, constant) to June (β = .820, *p*=.002) for both grades.

Another growth curve model was made to assess improvement in attendance over time between 9th- and 10th-grade students. Again, the first step was testing for goodness-of-fit of the model (DA Model). The test showed that there were slight problems with fit, and the modification indices, covariance matrices, and regression weights were reviewed for appropriate changes. The only change that was made was e1 was covaried with e2. There continued to be fit issues; however, many of the indices fell near acceptable limits and the results can be interpreted. The X^2/df fell well above the acceptable limits of $X^2/df \leq 5.00$ at 40.731. The CFI and NFI were both near the acceptable limits ≥ .950. The RMSEA also fell above the range of acceptability (>.05 to .08). This information can be found in Table 11.

Bootstrapping was completed to address sample nonnormality. See Table 12 for the regression weights with bootstrapping confidence intervals (CI) and adjusted *p*-values, which were used to help answer Research Question 5. These results should be interpreted with some caution due to slight fit issues. The hypothesized conditional growth curve model suggested that grade did not have a significant impact on the slope (β = -.073, *p*=.054), but did significantly impact the intercept (β = -.200, *p*=.021) of Days Absent. This indicated that the number of days absent was lower on average for 9th-grade students. Furthermore, it appears that the slope significantly increased from November (β = .000, constant) to June (β = .801, *p*=.023) for both grades. This is to be expected since the number of days are cumulative over the course of the school year.

Another growth curve model was made to assess improvement in ODRs over time

between 9th- and 10th-grade students. Again, the first step was testing for goodness-of-fit of the model (Model ODR). The test showed that there were slight problems with fit, and the modification indices, covariance matrices, and regression weights were reviewed for appropriate changes; however, no changes could be made to improve goodness-of-fit. The X^2/df fell well above the acceptable limits of $X^2/df \leq 5.00$ at 78.261. The CFI and NFI were both slightly lower than the acceptable limits ≥ .950. The RMSEA also fell above the range of acceptability (>.05 to .08).

Bootstrapping was completed to address sample nonnormality. See Table 12 for the regression weights with bootstrapping confidence intervals (CI) and adjusted *p*-values, which were used to help answer Research Question 5. These results should be interpreted with some caution due to fit issues. The hypothesized conditional growth curve model suggested that grade did have a significant impact on the slope (β = .178, p=.015) and significantly impacted the intercept (β = .147, p=.009) of ODRs. This indicates that ODRs were slightly higher for 9th-grade students. Furthermore, it appears that the slope significantly increased from November (β = .000, constant) to June (β = .616, p=.002) for students in both grades. This is to be expected since ODRs are cumulative over the course of the school year.

Results for Research Question 6

Research Question 6 focuses on differences between 9th- and 10th-grade students on student engagement factors. The question initially intended to analyze whether 9th-grade students improved on engagement factors over the course of the school year. As previously discussed, this analysis could not take place; therefore, it is being treated as a means comparison model similar to Research Question 7.

Goodness-of-fit was tested and showed that there were some problems with fit, and the modification indices, covariance matrices, and regression weights were reviewed for appropriate changes. The only changes that were made were covarying e11 with e13. The X^2/df fell within acceptable limits of $X^2/df \leq 5.00$ at 3.858. The CFI and NFI were both near acceptable limits ≥ .950. The RMSEA also fell within the range of acceptability (>.05 to .08). See Table 13 for model fit indices.

For this research question, analyses explored difference between the means of variables based on grade. In general, 9th-grade students had higher means than 10th-grade students on student engagement factors: the psychological engagement factor of Student-Teacher Relationships for 9th-grade (*M*= 23.229, *SEM*= .238) compared to 10th-grade (*M*= 19.178, *SEM*= .366); the psychological engagement factor of Peer Support for Learning for 9th-grade (*M*= 18.244, *SEM*= .193) compared to 10th-grade (*M*= 16.130, *SEM*= .168); the psychological engagement factor of Family Support for Learning for 9th-grade (*M*= 13.723, *SEM*= .115) compared to 10th-grade (*M*= 12.447, *SEM*= .169); the cognitive engagement factor of Future Aspirations and Goals for 9th-grade (*M*= 17.262, *SEM*= .140) compared to 10th-grade (*M*= 15.707, *SEM*= .176); and the cognitive engagement factor of Control/Relevance for 9th-grade (*M*= 25.567, *SEM*= .290) compared to 10th-grade (*M*= 20.094, *SEM*= .488). These results can be found in Table 14.

Results for Research Question 7

Research Question 7 focused on differences in Early Warning Indicator (EWI) variables between the 9th-grade class who participated in the transition program and the 10th-grade class who did not participate in the program the previous school year. The question was designed to address whether the 9th-grade class failed fewer classes,

attended more school days, and had fewer discipline referrals than the 10th-grade class.

This research question explored differences between the means of variables based on grade. In general, 9th-grade students had a lower average GPA (*M*= 2.710, *SEM*= .039) compared to 10th-grade (*M*= 3.092, *SEM*= .048). Ninth-grade students also had slightly more ODRs (*M*= 1.024, *SEM*= .156) compared to 10th-grade students (*M*= .360, *SEM*= .060). Ninth-grade students did miss fewer school days (*M*= 11.715, *SEM*= .587) than 10th-grade students (*M*= 13.354, *SEM*= .650). These results can be found in Table 15.

Results for Research Question 8

Research Question 8 explored the relationship between demographic background variables such as race, grade, socioeconomic status, gender, and middle school of origin and how they correlate with participation in dropout prevention programs, level of cognitive and psychological engagement, and/or Early Warning Indicator (EWI) outcome variables. The results were broken down by each demographic variable and differences in regression weights were reported. Each Multigroup Model based on the Main At-Risk Model (Model 2) needed to be tested again for goodness-of-fit because different groups were being assessed, changing the sample size. Also, bootstrapping was performed since the main model showed issues with normality.

Race

Goodness-of-fit with the Main At-Risk Model (Model 2) based on race/ethnicity was tested and showed that there were some problems with fit, and the modification indices, covariance matrices, and regression weights were reviewed for appropriate changes. The only changes that were made were covarying e2 with e4 and e11 with e13.

The X^2/df fell within acceptable limits of $X^2/df \leq 5.00$ at 4.012. The CFI and NFI were both near acceptable limits ≥ .950. The RMSEA also fell within the range of acceptability (>.05 to .08). This information is reported in Table 16.

Bootstrapping was completed to address sample nonnormality. See Table 17 for the regression weights with adjusted *p*-values, which were used to help answer Research Question 8. The multigroup analysis suggested that there were minimal differences based on race. There was very little difference between White students and Non-White students when examining the relationship between Participation and Engagement; all *p*-values fell above $p > 0.05$. There was a difference based on race in the relationship between Engagement and Risk. White students who scored higher on cognitive and psychological engagement were more likely to decrease their Risk or improve EWIs (β = -.345, p=.002) compared to Non-White students (β = -.176, p=.025). There was only a slight difference based on race in the relationship between Participation and Risk. White students showed the strongest relationship between Participation and Risk (β = .518, p=.002), indicating that participation in at-risk programs is correlated with higher risk compared to Non-White students (β = .471, p=.004). This information can be found in Table 17.

Grade

Goodness-of-fit with the Main At-Risk Model (Model 2) was tested and showed that there were some problems with fit, and the modification indices, covariance matrices, and regression weights were reviewed for appropriate changes. The only change that was made was covarying e11 with e13. The X^2/df fell within acceptable limits of $X^2/df \leq 5.00$ at 3.410. The CFI and NFI were both slightly lower than the acceptable limits ≥ .950. The RMSEA also fell within the range of acceptability (>.05 to .08). This

information can be found in Table 16.

Bootstrapping was completed to address sample nonnormality. See Table 18 for the regression weights with adjusted *p*-values, which were used to help answer Research Question 8. The multigroup analysis suggested that there were some slight differences based on grade. There were significant differences based on grade in the relationship between Participation and Risk. Eleventh-grade students showed the strongest relationship between Participation and Risk (β = .706, *p*=.001), indicating that participation in at-risk programs is correlated with higher risk. This same relationship did not hold true for 12th-grade students (β = .162, *p*=.215), where there was no significant relationship between participation in at-risk programs and Risk. There was very little difference between grade when looking at the relationship between Participation and Engagement with all *p*-values falling above $p > 0.05$. There was a difference based on grade in the relationship between Engagement and Risk. Tenth-grade students who scored higher on cognitive and psychological engagement were more likely to decrease their Risk or improve EWIs (β = -.366, *p*=.009). Conversely, 12th-grade students were the least likely to show a significant correlation between high engagement and decreased risk or improvement on EWIs (β = -.234, *p*=.097). This information can be found in Table 18.

Socioeconomic Status (SES)

Goodness-of-fit with the Main At-Risk Model (Model 2) was tested and showed that there were some problems with fit, and the modification indices, covariance matrices, and regression weights were reviewed for appropriate changes. The model would not allow for covariations between error terms. The X^2/df fell within acceptable limits of $X^2/df \leq 5.00$ at 4.770. The CFI and NFI were both slightly below the acceptable

limits ≥ .950. The RMSEA also fell within the range of acceptability (>.05 to .08). This information can be found in Table 16.

Bootstrapping was completed to address sample nonnormality. See Table 19 for the regression weights with adjusted *p*-values, which were used to help answer Research Question 8. The multigroup analysis suggested that there were some slight differences based on SES. There were slight differences based on SES in the relationship between Participation and Risk. Low SES students who participated in at-risk programs were more likely to be higher risk students (β = .505, *p*=.001) compared to non-low SES students (β = .413, *p*=.002).There was very little difference between students of from low SES households and non-low SES households when looking at the relationship between Participation and Engagement with both *p*-values falling above *p*> 0.05. There was a difference based on SES in the relationship between Engagement and Risk. Low SES students who scored higher on cognitive and psychological engagement were less likely to decrease their risk or improve EWIs (β = -.197, *p*=.023) compared to non-low SES students (β = -.292, *p*=.001). This information can be found in Table 19.

Gender

Goodness-of-fit with the Main At-Risk Model (Model 2) was tested and showed that there were some problems with fit, and the modification indices, covariance matrices, and regression weights were reviewed for appropriate changes. The modification indices suggested that covariations could be drawn from e1 and e2, e11 and e13, and e17 and e18. The X^2/df fell within acceptable limits of $X^2/df \leq 5.00$ at 3.804. The CFI and NFI were both near the acceptable limits ≥ .950. The RMSEA also fell within the range of acceptability (>.05 to .08). This information can be found in Table 16.

Bootstrapping was completed to address sample nonnormality. See Table 20 for the regression weights with adjusted *p*-values, which were used to help answer Research Question 8. The multigroup analysis suggested that there were some slight differences based on gender. There were really no differences in the relationship between Participation and Risk among male (β = .626, *p*=.002) and female students (β = .653, *p*=.001). There was a difference between male and female students in the relationship between Participation and Engagement with females showing a significant negative relationship (β = -.150, *p*=.007). For males, there was not a correlation between Participation and Engagement (β = .019, *p*=.683). There were slight differences based on gender in the relationship between Engagement and Risk. Male students who scored higher on cognitive and psychological engagement were more likely to decrease their risk or improve EWIs (β = -.347, *p*=.001) compared to female students (β = -.285, *p*=.008). This information can be found in Table 20.

Middle School (MS)

The model including all of the different middle schools attended could not be run because many of the group sizes were very small; therefore, the two main feeder schools were analyzed because they had sample sizes around *n*=300 or above. When this two-group model was run, an error message occurred. Furthermore, the goodness-of-fit test showed that there were some problems with fit, and the modification indices, covariance matrices, and regression weights were reviewed for appropriate changes. The modification indices suggested that covariations could be drawn from e2 and e3, e3 and e4, and e11 and e13. After all covariations were drawn, the model was rerun to determine whether the error message would resolve so that the model could run with accuracy. The

error message recurred, indicating that the results were not accurate; therefore, results of the model fit are reported below, but the model results are not. The X^2/df fell within acceptable limits of $X^2/df \leq 5.00$ at 3.410. The CFI and NFI fell below the acceptable limits ≥ .950. The RMSEA fell within the range of acceptability (>.05 to .08). This information can be found in Table 16.

Table 3

AMOS Variables

Code	Variable
Participation Variables	
Latent Variables	
Part	Participation
Measured Variables	
SPED	Special Education
Rclass	Reading Class
Mlab	Math Lab
Sskills	Study Skills
LIA	Latinos in Action (LIA)
AVID	Advancement Via Individual Determination (AVID)
Engagement Variables	
Latent Variables	
Engage	Student Engagement
Cog	Cognitive Engagement
Psy	Psychological Engagement
Measured Variables	
FA_Cog	Future Aspirations
CR_Cog	Control and Relevance
FS_Psy	Family Support for Learning
PS_Psy	Peer Support for Learning
TR_Psy	Student-Teacher Relationships
EWI Variables	
Latent Variables	
Risk	Risk
Measured Variables	
DA	Days Absent
GPA	Grade Point Average
ODRs	Office Discipline Referrals

Table 4

Fit Indices for Research Question 1

Model	Factors	X^2	*df*	X^2/df	CFI	NFI	RMSEA	CI for RMSEA
1	7	186.856	14	13.347	.680	.667	.097	.085, .110
2	7	22.558	9	2.506	.975	.960	.034	.017, .052
3	5	10.211	3	3.404	.985	.979	.043	.016, .073

Table 5

Regression Weights: Research Question 1 Using Model 2

Variable Relationship	Regression Weight	*p*-value	Bootstrap CI	*p*-value
AvRisk with Part	.255	>0.001	.175, .332	0.002
SPED with Part	.491	>0.001	.365, .621	0.003
Rclass with Part	.292	>0.001	.182, .421	0.002
Mlab with Part	.322	>0.001	.210, .455	0.002
Sskills with Part	.688	>0.001	.556, .867	0.005
LIA with Part	.109	0.003	.019, .203	0.034
AVID with Part	.094	0.016	.021, .200	0.024

Table 6

Fit Indices for Main At-Risk and Prevention Model

Model	Factors	X^2	*df*	X^2/df	CFI	NFI	RMSEA	CI for RMSEA
1	16	972.766	99	9.826	.832	.817	.082	.077, .087
2	11	216.520	44	4.921	.955	.944	.055	.047, .062
3	10	170.045	28	6.073	.956	.948	.062	.053, .071

Table 7

Regression Weights: Main At-Risk Model 2

Variable Relationship	Regression Weight	*p*-value	Bootstrap CI	*p*-value
Part to Engage	-.047	.189	-.108, .019	0.233
Engage to Risk	-.253	>0.001	-.335, -.118	0.001
Part to Risk	.537	>0.001	.426, .637	0.008
Engage to Psy	1.114	>0.001	1.003, 1.270	0.009
Engage to Cog	.824	>0.001	.714, .923	0.002
Part to Sskills	.532	>0.001	.444, .621	0.004
Part to Mlab	.411	>0.001	.315, .534	0.001
Part to Rclass	.185	>0.001	.098, .308	0.002
Part to SPED	.642	>0.001	.526, .788	0.003
Cog to FA_Cog	.579	>0.001	.542, .615	0.004
Cog to CR_Cog	.905	>0.001	.875, .936	0.006
Psy to FS_Psy	.568	>0.001	.530, .603	0.005
Psy to PS_Psy	.715	>0.001	.672, .752	0.006
Psy to TR_Psy	.874	>0.001	.848, .902	0.003
Risk to ODRs	.444	>0.001	.356, .525	0.007
Risk to DA	.392	>0.001	.330, .460	0.002
Risk to GPA	-.739	>0.001	-.526, -.788	0.002

Table 8

Total Effects: Main At-Risk Model 2

Variable Relationship	Regression Weight	Bootstrap CI	*p*-value
Part to FA_Cog	-.022	-.054, .008	0.193
Part to CR_Cog	-.035	-.080, .012	0.203
Part to TR_Psy	-.046	-.111, .019	0.245
Part to PS_Psy	-.038	-.092, .014	0.237
Part to FS_Psy	-.030	-.073, .013	0.249
Part to GPA	-.405	-.469, -.341	0.006
Part to DA	.215	.169, .263	0.003
Part to ODR	.244	.159, .321	0.009
Engage to GPA	.187	.145, .249	0.001
Engage to DA	-.099	-.144, -.070	0.001
Engage to ODR	-.113	-.162, -.074	0.002

Table 9

Post-hoc Regression Weights: Main Prevention Model 3

Variable Relationship	Regression Weight	*p*-value	Bootstrap CI	*p*-value
Part to Engage	.131	.046	.027, .271	0.049
Engage to Risk	-.311	>0.001	-.416, -.216	0.002
Part to Risk	.259	0.011	.152, .420	0.002
Engage to Psy	1.076	>0.001	.955, 1.222	0.004
Engage to Cog	.854	>0.001	.733, .966	0.005
Part to AVID	.435	>0.001	.258, .703	0.006
Part to LIA	.349	0.009	.195, .565	0.002
Cog to FA_Cog	.581	>0.001	.544, .616	0.005
Cog to CR_Cog	.901	>0.001	.870, .931	0.005
Psy to FS_Psy	.567	>0.001	.529, .692	0.005
Psy to PS_Psy	.714	>0.001	.671, .749	0.008
Psy to TR_Psy	.876	>0.001	.850, .904	0.003
Risk to ODRs	.402	>0.001	.298, .495	0.003
Risk to DA	.419	>0.001	.335, .497	0.002
Risk to GPA	-.763	>0.001	-.921, -.654	0.008

Table 10

Post-hoc Total Effects: Main Prevention Model 3

Variable Relationship	Regression Weight	Bootstrap CI	*p*-value
Part to FA_Cog	.065	.013, .152	0.046
Part to CR_Cog	.100	.022, .230	0.044
Part to TR_Psy	.123	.025, .238	0.050
Part to PS_Psy	.100	.020, .188	0.054
Part to FS_Psy	.080	.017, .154	0.049
Part to GPA	-.167	-.279, -.075	0.003
Part to DA	.092	.056, .173	0.000
Part to ODR	.088	.053, .154	0.001
Engage to GPA	.237	.177, .300	0.003
Engage to DA	-.130	-.198, -.079	0.001
Engage to ODR	-.125	-.194, -.072	0.002

Table 11

Fit Indices for Secondary Research Question 5

Model	Factors	X^2	*df*	X^2/df	CFI	NFI	RMSEA	CI for RMSEA
GPA	4	4893.099	4	1223.275	.171	.171	1.433	1.400, 1.467
DA	4	122.192	3	40.731	.942	.941	.258	.220, .299
ODRs	4	313.044	4	78.261	.891	.889	.360	.327, .395

Table 12

Regression Weights: Secondary Research Question 5

Variable Relationship	Regression Weight	Bootstrap CI	*p*-value
GPA			
Grade to SLOPE	-.017	-.074, .102	0.766
Grade to ICEPT	.008	-.078, .067	0.811
ICEPT to Nov_GPA	.935	.922, .947	0.007
SLOPE to Nov_GPA	.000	.000, .000	---
ICEPT to Mar_GPA	1.095	1.074, 1.120	0.003
SLOPE to Mar_GPA	.399	.399, .358	0.002
ICEPT to Jun_GPA	1.127	1.084, 1.175	0.004
SLOPE to Jun_GPA	.820	.732, .920	0.002
DA			
Grade to SLOPE	-.073	-.152, -.011	.054
Grade to ICEPT	-.200	-.332, -.085	.021
ICEPT to Nov_DA	.642	.493, .779	.003
SLOPE to Nov_DA	.000	.000, .000	---
ICEPT to Mar_DA	.252	.181, .329	.004
SLOPE to Mar_DA	.660	.628, .693	.018
ICEPT to Jun_DA	.153	.110, .203	.003
SLOPE to Jun_DA	.801	.774, .822	.023
ODR			
Grade to SLOPE	.178	.124, .241	.015
Grade to ICEPT	.147	.088, .199	.009
ICEPT to Nov_DA	.939	.897, .957	.004
SLOPE to Nov_DA	.000	.000, .000	---
ICEPT to Mar_DA	.575	.530, .657	.008
SLOPE to Mar_DA	.436	.378, .476	.002
ICEPT to Jun_DA	.406	.365, .490	.007
SLOPE to Jun_DA	.616	.562, .657	.002

Table 13

Fit Indices for Secondary Research Questions 6 and 7

Model	Factors	X^2	*df*	X^2/df	CFI	NFI	RMSEA	CI for RMSEA
1	9	165.476	44	3.761	.935	.915	.063	.053, .073

Table 14

Means and Standard Error for Student Engagement Variables by Grade

Variable	Mean		SEM		Adjusted p-value	
	9th	10th	9th	10th	9th	10th
TR_Psy	23.229	19.178	.238	.366	0.007	0.007
PS_Psy	18.244	16.130	.193	.168	0.005	0.005
FS_Psy	13.723	12.447	.115	.169	0.005	0.006
CR_Cog	25.567	20.094	.290	.488	0.006	0.004
FA_Cog	17.262	15.707	.140	.176	0.004	0.006

Table 15

Means and Standard Error for EWI Variables

Variable	Mean		SEM		Adjusted *p*-value	
	9th	10th	9th	10th	9th	10th
GPA	2.710	3.092	.039	.048	0.006	0.010
Days Absent	11.715	13.354	.587	.650	0.002	0.003
ODRs	1.024	.360	.156	.060	0.002	0.002

Table 16

Research Question 8 Fit Indices

Model	Factors	X^2	*df*	X^2/df	CFI	NFI	RMSEA	CI for RMSEA
Race	12	377.157	94	4.012	.927	.906	.048	.043, .053
Grade	12	654.736	192	3.410	.886	.849	.043	.039, .047
SES	12	467.421	98	4.770	.858	.830	.063	.058, .070
Gender	12	349.924	92	3.804	.934	.914	.046	.041, .051
MS	12	313.735	92	3.410	.904	.872	.055	.048, .061

Table 17

Secondary Research Question 8: Race

Variable Relationship	Regression Weight		*p*-value	
	White	Non-white	White	Non-White
Part to Risk	.518	.471	0.002	0.004
Part to Engage	-.050	.021	0.236	0.723
Engage to Risk	-.345	-.176	0.002	0.025

Table 18

Secondary Research Question 8: Grade

Variable Relationship	Regression Weight				*p*-value			
	9th	10th	11th	12th	9th	10th	11th	12th
Part to Risk	.601	.495	.706	.162	0.001	0.001	0.001	0.215
Part to Engage	-.111	.087	-.114	.071	0.255	0.502	0.432	0.579
Engage to Risk	-.267	-.366	-.271	-.234	0.025	0.009	0.005	0.097

Table 19

Secondary Research Question 8: SES

Variable Relationship	Regression Weight		*p*-value	
	Low SES	Not Low SES	Low SES	Not Low SES
Part to Risk	.505	.413	0.001	0.002
Part to Engage	-.052	-.052	0.338	0.681
Engage to Risk	-.197	-.292	0.023	0.001

Table 20

Secondary Research Question 8: Gender

Variable Relationship	Regression Weight		*p*-value	
	Male	Female	Male	Female
Part to Risk	.626	.653	0.002	0.001
Part to Engage	.019	-.150	0.683	0.007
Engage to Risk	-.347	-.285	0.001	0.008

CHAPTER 4

DISCUSSION

The purpose of the current study was to explore the relationship of participation in at-risk/prevention programs, student engagement variables, and EWI variables within an Early Warning System framework. Schools need to continue to improve their ability to identify at-risk students and connect them with appropriate school supports and programs. Much of the research on high school dropout has focused on identifying risk factors. Poor attendance, low grades (especially in core classes), and office discipline referrals have been identified as risk factors that are important for schools to track. Student engagement variables, including cognitive and psychological engagement, have also been identified as factors that are helpful in identifying students at-risk. The current study aimed to assess whether the target school's EWS and prevention/intervention programs were effective in improving students' EWIs (attendance, behavior, and academic performance) and student engagement. The study also examined whether school-based at-risk programs potentially improved student engagement, and whether students with higher student engagement had better student outcomes. This is important because few studies have looked at the impact of school-based at-risk programs on student engagement and EWIs while also evaluating the effectiveness of the EWS.

The study also addressed secondary research questions focused on the 9th-grade transition year. The target high school had implemented a universal transition program

for the incoming 9th-grade class. The study assessed for differences in EWI and student engagement variables during the school year for 9th-grade students in comparison to 10th-grade students who did not participate the previous year in a transition program. Also, since previous research has found that there are differences in dropout rates based on income, race/ethnicity, and other demographic factors, the study examined the influence of these variables on engagement and EWI outcomes.

Main Findings

Research Question 1

The first research question addressed whether the target high school was effectively using the EWS data to connect students to school supports and programs. The structural model was set up to understand whether an increase in average risk (AvRisk) was correlated with participation in one of the at-risk and prevention programs. Average risk takes into consideration all three early warning indicators and then assigns a risk level based on those indicators. The results indicate that there was a positive relationship between students' average risk level and participation in at-risk and prevention programs ($\beta = .255$, $p = 0.002$); however, the relationship was not very strong. The reason for the low correlation could be that the included programs targeted different groups of students. For example, it was theorized that LIA and AVID were primarily prevention programs, and therefore did not necessarily correlate with increased student risk. These programs loaded the lowest onto the latent variable of Participation. The support program that loaded the highest onto Participation was Study Skills ($\beta = .688$, $p = 0.005$), indicating that this program correlates the strongest with Participation. This is an interesting finding, suggesting that the Study Skills class is the variable that is most strongly associated with

at-risk student participation in a prevention/intervention program. This may indicate that it is the program that school staff are most likely to recommend as an intervention class for at-risk students. The results also suggest that not all students who are designated as "at-risk" or "significant risk" are placed in at-risk or prevention programs. This is especially true for the prevention programs, which help provide supports to prevent students from becoming "at-risk."

Research Question 2

The second research question addressed whether participation in school-based supports and at-risk programs resulted in an increase in students' cognitive and psychological engagement as assessed through the SEI, a self-report measure of student engagement. Two models were created to address the fact that certain programs were primarily preventative in nature while others were primarily at-risk intervention programs. Findings from both models are discussed below.

Main At-Risk Model (Model 2) focused solely on participation in programs designed specifically for at-risk students (e.g., Study Skills, Special Education, Reading Class, and Math Lab). Results from Model 2 suggested that participation in at-risk programs was not correlated with an increase in students' self-report of student engagement. Since the relationship was not significant, direct relationships between each of the factors on the cognitive and psychological engagement scales of the SEI were not further explored.

Main Prevention Model (Model 3), which included the prevention programs AVID and LIA, was tested separately from Model 2. Results from Model 3 suggested that participation in prevention programs was significantly positively correlated with

students' self-reported engagement (β = .131, p=0.046), with a CI of .027 to .271 (p = .049). Since there was a significant relationship between participation and engagement, the specific relationship between participation and each of the factors for cognitive and psychological engagement was explored.

The factors included on the cognitive engagement scale of the SEI were Future Aspirations and Goals and Control and Relevance. The factors that were included on the psychological engagement scale of the SEI were Student-Teacher Relationships, Peer Support for Learning, and Family Support for Learning. There were small but significant positive relationships between participation in prevention programs and the cognitive engagement factor of Future Aspirations and Goals and the factor of Control and Relevance. There also were small but significant positive relationships between participation in prevention programs and the psychological engagement factors of Student-Teacher Relationships, Peer Support for Learning, and Family Support for Learning.

Results suggest that the relationship between participation in prevention programs and student engagement factors (Model 3) was positive and significant while the relationship between participation in at-risk programs and student engagement (Model 2) was not significant. A possible reason for this difference is that the prevention programs of AVID and LIA are not specifically targeting students who are demonstrating risk, and may already be experiencing lower levels of cognitive and psychological engagement. Furthermore, both AVID and LIA aim to get students more involved in school and in their local communities. These principles could positively impact students' cognitive and psychological engagement, resulting in greater school connectedness for these students in

comparison with students participating in other school programs. This might be particularly true for students in LIA, where studies have already documented higher levels of school engagement, desire for educational attainment, and feelings that school was a major factor in self-understanding than their Latino peers not enrolled in LIA (Enriquez, 2012). AVID also helps prepare students for college and future learning opportunities; therefore, students participating in this program may score higher on the cognitive engagement factor Future Aspirations and Goals. Furthermore, 95% of students in the AVID program were enrolled in a college or university after completing high school (Guthrie & Guthrie, 2000), indicating that the students in AVID value education.

Research Question 3

The third research question focused on the relationship between students' self-reported level of cognitive and psychological engagement and specific Early Warning Indicators. Results from Main At-Risk Model (Model 2) (which focused on the at-risk intervention programs) suggested that student engagement was negatively correlated with student risk (β = -.253, p=>0.001), with a CI of -.335 to -.118 (p = .001). The negative correlation indicates that increases in student engagement correlated with decreases in Risk. This finding is encouraging, and indicates that there is a protective relationship between student engagement and decreased Risk. Since the direct effect between Engagement and Risk was significant, the total effect between Engagement and each of the EWI variables was explored.

The EWI variables that were explored further in Main At-Risk Model (Model 2) included GPA, Days Absent, and Office Discipline Referrals (ODRs). The standardized total effect between students' cognitive and psychological engagement and GPA was β =

.187, with a CI of .145 to .249 (p = .001). This indicates that there is a slight positive relationship between reported student engagement and GPA. GPA was used instead of the number of failing grades because it was a richer estimate of academic achievement. The positive relationship suggests that higher student engagement is slightly correlated with higher academic achievement or GPA. This finding is consistent with past research. The Check & Connect program that aims to increase student engagements consistently finds that students involved in the program have better academic outcomes (Reschly & Christenson, 2012). Another study found that higher levels of cognitive engagement increased academic achievement (Greene & Miller, 1996).

The standardized total effect between students' cognitive and psychological engagement and Days Absent was β = -.099, with a CI of -.144 to -.070 (p = .001). This indicates a slight negative relationship between reported student engagement and Days Absent. The negative correlation between student engagement and Days Absent is an encouraging finding and is aligned with the initial hypothesis that attendance was associated with higher student engagement. These results suggest that students with higher levels of engagement attend school more often. This may serve as a protective factor to increase the likelihood of high school completion and reduce the likelihood of dropping out. This is confirms previous theories, such as Finn's Participation-Identification Model (1989).

The standardized total effect between students' cognitive and psychological engagement and Office Discipline Referrals (ODRs) was β = -.113, with a CI of -.162 to -.074 (p = .002). This indicates a slightly negative relationship between reported student engagement and office discipline referrals. This finding is also aligned with the study's

hypothesis, and suggests that there is a correlation between student engagement and fewer discipline referrals. Again, this is consistent with previous theories, such as Finn Participation-Identification Model (1989). Also, Fredrickson (1998, 2001) posit when students experience positive emotions it is believed that this help them adapt to their environment and maintain well-being; however, when individuals experience negative emotions it is believed to have the reverse effect, and decreases learning and adaptive thoughts and behaviors (Fredrickson, 2001).

Findings for all of the EWIs were significantly correlated with engagement for Model 2 (at-risk intervention programs); however, the regression weights were all small. This indicates that the relationship in general for all of the EWI variables was weak, and there are potentially other variables that could account for greater variance. Despite the weak correlation, this finding suggests that cognitive and psychological engagement is significantly correlated with student outcomes for at-risk students, and may have a protective effect for at-risk students.

Main Prevention Model (Model 3) was also analyzed to determine whether there was a relationship between student engagement and risk. This analysis revealed similar results to Model 2 (which focused on at-risk intervention programs). Model 3 results suggested that engagement was significantly negatively correlated with students' risk ($\beta = -.311$, $p < .001$), with a CI of -.416 to -.216 ($p = .002$). This is a slightly stronger correlation between reported student engagement and risk than found in the analysis with Model 2. Additional analyses of the relationship between engagement and each of the EWI variables also were conducted.

The EWI variables that were explored further in Model 3 included GPA, Days

Absent, and ODRs. The standardized total effect between engagement and GPA was β = .237, with a CI of .117 to .300 (*p*= .003). This indicates that there was a slightly stronger positive relationship between engagement and GPA for Model 3 (prevention programs) compared to Model 2 (at-risk intervention programs). The standardized total effect between engagement and days absent was β = -.130, with a CI of -.198 to -.079 (*p*= .001), indicating a slightly stronger negative relationship between engagement and Days Absent for Model 3 compared to Model 2. The standardized total effect between engagement and ODRs was β = -.125, with a CI of -.194 to -.072 (*p*= .002), again indicating a slightly stronger negative relationship between engagement and discipline referrals for Model 3 in comparison to Model 2.

Considering that students in the prevention programs had stronger correlations between student engagement and EWIs than the students in the at-risk intervention programs, it is not surprising that there also was a stronger relationship between student engagement and decreased Risk for this group of students. This is a significant finding, suggesting that the prevention programs may be helping to keep students at a lower risk level on all EWI variables by enhancing these students' cognitive and psychological engagement. It is also important to mention that although prevention programs showed a stronger relationship, at-risk programs also showed the same relationship, with student engagement decreasing Risk.

Research Question 4

The fourth research question focused on whether participation in at-risk programs (Model 2) and prevention programs (Model 3) correlated with improvements on Early Warning Indicator (EWI) variables. For Model 2, analyses suggested that participation in

at-risk programs was positively correlated with student overall Risk (β = .537, *p*=>0.001), with a CI of .426 to .637 (*p* = .008). This is the opposite of what was hypothesized. Students participating in the at-risk programs actually had correlations with higher risk. Given that these programs are designed for students who are at-risk and these students are likely placed in these programs for poor academic, behavioral, and attendance outcomes, this finding is not surprising. To determine whether any specific EWI of risk had a differential relationship with participation in at-risk programs, the total effects between participation and each of the EWI variables were explored.

The standardized total effect between participation in at-risk programs and GPA was β = -.405, with a CI of -.469 to -.341 (*p*= .006). This indicates that there was a negative correlation between participation in at-risk programs and academic achievement or GPA. The standardized total effect between participation in at-risk programs and days absent was β = .215, with a CI of .169 to .263 (*p*= .003), indicating a positive relationship between participation in at-risk programs and Days Absent. The standardized total effect between participation in at-risk programs and ODRs was β = .244, with a CI of .159 to .321 (*p*=.009), which also indicates a positive relationship between participation in at-risk programs and office discipline referrals. The correlations between participation in at-risk programs and all of the risk indicators (EWIs) were the opposite of what was hypothesized. The opposite correlations were likely found because many of the students in the at-risk program were placed in these programs because they were at significant risk based on their EWIs.

Model 3 was also analyzed to determine the relationship between Participation and Risk for students who participated in prevention programs. Participation in

prevention programs was significantly positively correlated with Risk (β = .259, *p*= .011), with a CI of .152 to .420 (*p* = .002); however, this relationship was not as strong as it was for students participating in at-risk intervention programs indicating that participation in prevention programs has a weaker correlation with the variable Risk.

The standardized total effect between participation in prevention programs and GPA was β = -.167, with a CI of -.279 to -.075 (*p*= .003), indicating a slightly weaker negative relationship with GPA for students participating in prevention programs compared to students participating in at-risk intervention programs. The standardized total effect between participation in prevention programs and days absent was β = .092, with a CI of .056 to .173 (*p*= .000). These results indicate a slightly weaker positive relationship with Days Absent for students participating in prevention programs than students participating in at-risk intervention programs. The standardized total effect between participation in prevention programs and ODRs was β = .088, with a CI of .053 to .154 (*p*= .001), which indicates that there is a slightly weaker negative relationship with ODRs for students participating in prevention programs compared to students participating in at-risk intervention programs. Although significant, all of these effects were very small indicating weak relationships between participation in prevention programs and all EWI variables.

The differences between results for Model 2 (at-risk intervention programs) and Model 3 (prevention programs) provides further evidence that prevention programs are associated with less risk for students than at-risk programs. The findings for the at-risk intervention programs are somewhat discouraging, however, not surprising considering these programs target students who are at elevated risk based on their EWIs. Taken

together, the results for Research Questions 3 and 4 reveal that higher cognitive and psychological engagement may be a mediating factor for risk, and engagement potentially acts as a protective factor for at-risk students. This finding confirms previous research.

Secondary Research Questions

Research Question 5

Research Question 5 focused on the 9th-grade students who participated in the newly implemented Link Crew transition program. The question explored whether the 9th-grade student transition program resulted in improvement in EWI variables (GPA, Days Absent, ODRs) for these students from Fall to Spring. The 10th-grade class was used as a comparison because they did not participate in the Link Crew program the year prior. The results from these analyses need to be interpreted with some caution because there were minor model fit issues.

The hypothesized conditional latent growth curve model for GPA suggested that grade did not have a significant impact on the slope (β = .017, p=.799) or intercept (β = -.008, p=.811) of GPA. The slope significantly increased from November (β = .000, constant) to June (β = .820, p=.002), however, for both grades. The increase suggests no substantial differences between the two grades, but rather improvement for both 9th- and 10th-grade students across the school year.

The model for Days Absent also showed significant problems with fit, indicating that the results need to be interpreted with caution. The results for Days Absent suggest that grade did not have a significant impact on the slope (β = -.073, p=.054), but did significantly impact the intercept (β = -.200, p=.021) of Days Absent. This indicated that

the number of days absent was lower on average for 9th-grade students. Furthermore, it appeared that the slope significantly increased from November (β = .000, constant) to June (β = .801, *p*=.023) for both grades. This is to be expected since the number of days are cumulative over the course of the school year. Again, these results should be interpreted with caution because the fit indices indicated significant issues with the model, but may suggest that 9th-graders experienced fewer absences between November and June than 10th-graders. This finding possibly suggests that Link Crew could have had a positive impact on attendance, and is consistent with previous research that found Link Crew participants had fewer absences and tardies (Boomerang Analysis, 2011).

The growth curve model for ODRs also showed major problems with fit; however, the hypothesized conditional growth curve model suggested that grade did have a significant impact on the slope (β = .178, *p*=.015) and significantly impacted the intercept (β = .147, *p*=.009) for ODRs. These results suggest that ODRs were slightly higher for 9th-grade students throughout the school year. Furthermore, it appears that the slope significantly increased from November (β = .000, constant) to June (β = .616, *p*=.002) for students in both grades. This increase is to be expected since ODRs are cumulative over the course of the school year. It is not clear why 9th-grade students had more ODRs than 10th-graders, but it could have possibly been due to student attrition by the 10th grade.

Results suggest that 9th-graders had fewer absences during the school year than 10th-graders and that 9th-graders had more office discipline referrals than 10th-graders. These differences were very small, but significant; however, attributing these results to participation in Link Crew are speculative at best. Anecdotal evidence from one of the

teachers over the Link Crew program suggests that there may have been program compliance issues among the 11th- and 12th-grade Link Leaders who served as peer mentors to incoming 9th-graders which may have impacted implementation integrity. Additionally, there are potentially confounding cohort effects at play since these two groups of students are bound by time and life experiences beyond just exposure to the Link Crew transition program.

Research Question 6

Research Question 6 focused on differences between 9th- and 10th-grade students on student engagement factors. The question initially aimed to analyze whether 9th-grade students improved in their perceptions of engagement over the course of the school year. Due to the short time period between data collection points and the lack of a third data collection point, a growth analysis could not take place; therefore, analyses were conducted as a means comparison model. Results indicated that 9th-grade students had higher means than 10th-grade students on the psychological engagement factors of Student-Teacher Relationships, Peer Support for Learning, and Family Support for Learning, as well as the cognitive engagement factors of Future Aspirations and Goals and Cognitive Engagement Control/Relevance (see Table 14).

These findings suggest that 9th-grade students in general reported higher cognitive and psychological engagement than 10th-graders at the end of the school year. Again, the potential for confounding cohort differences and the fact that 10th-grade students have a full year of additional interactions in the high school setting preclude concluding that these differences engagement can be attributed to participation in the Link Crew transition program, but it is clear that the 9th-grade class felt more connected and engaged

in school than the 10th-grade class.

Research Question 7

Research Question 7 assessed for differences in Early Warning Indicator (EWI) variables between the 9th-grade class who participated in the Link Crew transition program and the 10th-grade class who did not participate in the program the previous school year. It was hypothesized that for the Link Crew transition program to demonstrate a positive impact, the 9th-grade class would have failed fewer classes, attended more school days, and experienced fewer discipline referrals than the 10th-grade class.

Results indicated that 9th-grade students had a lower average GPA (*M*= 2.710, *SEM*= .039) compared to 10th-grade (*M*= 3.092, *SEM*= .048) and had slightly more ODRs (*M*= 1.024, *SEM*= .156) compared to 10th-grade students (*M*= .360, *SEM*= .060). These results correspond to the growth curve analysis results that indicated differences in slope between 9th- and 10th-grade students, with 9th-graders improving their attendance compared to 10th-grade students, and 9th-graders receiving more office discipline referrals throughout the school year. These results strengthen the growth curve analysis findings.

Results of the means comparisons also found that 9th-grade students missed fewer days of school (*M*= 11.715, *SEM*= .587) than 10th-grade students (*M*= 13.354, *SEM*= .650). Taken together, these results do not suggest that the 9th-grade class did better overall on EWI variables compared to the 10th-grade class, although they did have fewer absences. It is important to take into consideration student attrition, however. The students who may have scored poorly on student outcome indicators as 9th-graders could have potentially left for another school or left school completely. Student attrition could

have potentially impacted the 10th-grade results causing them to appear to score better on the GPA and ODR indicators.

The Link Crew program could have potentially increased 9th-graders engagement and school connectedness, and may have resulted in greater school attendance. Again, these findings are difficult to attribute solely to the Link Crew transition program due to the previously mentioned potential for cohort effects. Also, the 10th-grade students in theory had an additional year in which to receive support through one of the targeted at-risk or prevention programs. The 9th-grade class only had 1 year to be identified and connected with an at-risk/prevention program and benefit from participating. This also makes it difficult to identify exactly what impacted EWIs for each grade level.

Research Question 8

Research Question 8 explored demographic background variables such as race, grade, socioeconomic status, gender, and middle school of origin and how they correlated with participation in at-risk programs, level of cognitive and psychological engagement, and EWI outcome variables. Multigroup analyses were conducted to address each demographic variable separately.

The multigroup analysis suggested that there were minimal differences based on race (see Table 17). There was only a slight difference based on race in the relationship between Participation and Risk with White students showing a stronger relationship than Non-White students. These results suggest that participation in at-risk programs is correlated with higher risk for White students than Non-White students. It is unclear what this finding suggests, but one possibility may be that the school places more White students in these programs, therefore resulting in a stronger correlation for this group.

There were no significant differences between White students and Non-White students, when looking at the relationship of Participation with Engagement. Of interest, there was a difference based on race in the relationship between Engagement and Risk. White students who scored higher on cognitive and psychological engagement were more likely to have lower Risk or better performance on EWIs compared to Non-White students, indicating that the protective effect of increased cognitive and psychological engagement may be more powerful depending on race/ethnicity.

The multigroup analysis also suggested that there were some differences based on grade (see Table 18). There were significant differences based on grade in the relationship between Participation and Risk. Eleventh-grade students showed the strongest relationship between participation and risk, indicating that participation in at-risk programs are correlated with higher risk. This same relationship did not hold true for 12th-grade students, where there was no significant relationship between participation in at-risk programs and risk. These two findings for 12th-grade students suggest that school engagement may not play as big a protective role for at-risk students compared to other grades. This could be because the at-risk students with poor engagement and who are the most at-risk may have already left the school setting or students in 12th-grade are already starting to associate themselves with leaving school and the school supports are less important. There were no significant differences based on grade when looking at the relationship between Participation and Engagement. There were differences based on grade in the relationship between engagement and risk. Tenth-grade students who scored higher on cognitive and psychological engagement were more likely to have less Risk or better performance on EWIs. Conversely, 12th-grade students were the least likely to

show a significant correlation between high engagement and decreased Risk or improvement on EWIs (β = -.234, *p*=.097).

The multigroup analysis also suggested that there were some slight differences based on SES (see Table 19). There were differences based on SES in the relationship between Participation and Risk. Low SES students who participated in at-risk programs were more likely to have higher Risk compared to those students who were not Low SES. These findings are not surprising because research has shown that students who come from low SES households are at greater risk for poor school outcomes than their peers who come from homes with average to above average SES (Hammond et al., 2007; Rumberger, 2001). There were no significant differences between students who qualified for free and reduced lunch and those households that did not qualify when looking at the relationship between Participation and Engagement. There were significant differences based on SES in the relationship between Engagement and Risk. Low SES students who scored higher on cognitive and psychological engagement were less likely to have lower risk or better performance on EWIs compared to those students from non-Low SES households.

There were also some significant differences based on gender as a result of the multigroup analysis (see Table 20). There was no significant difference based on gender in the relationship between Participation and Risk. These findings indicate that female students in at-risk programs report feeling less engaged in school, suggesting that higher levels of student engagement do not seem to be as protective for female students as they are for male students. This finding may help to inform the growing body of research showing a widening gender gap in academic achievement often thought to be mediated

by engagement and motivation (Furlong & Christenson, 2008; Lam et al., 2012). It is possible, however, that for female students at higher risk, their cognitive and psychological engagement may be significantly underdeveloped so that it no longer has any mediating effects. There was a significant difference between male and female students in the relationship between Participation and Engagement with females showing a significant negative relationship between Participation and Engagement while there was no correlation between Participation and Engagement for males. There also were significant differences based on gender in the relationship between Engagement and Risk. Male students who scored higher on cognitive and psychological engagement were more likely to have lower Risk or better performance on EWIs compared to female students.

The data did not permit any conclusions based on the middle school that participating students attended. The model that included all of the different middle schools could not be run due to the small sample size of many of the groups. For this reason, an attempt was made to limit analysis to the two main feeder schools because they had sample sizes around n=300 or above. An error message was received, however, when this multigroup model was run. Modifications to the fit of the model were made, but the error message recurred, precluding the results from being reported.

Strengths and Limitations

The current study had many strengths worth highlighting. First, the study had access to a large sample of high school students. The high school where the study took place had an enrollment of approximately 2,000 students, and both data collections were successful in capturing around 75% or more of the target sample. The SPSS AMOS software can more easily fit models and draw conclusions about relationships when there

is a sample size of 200 or more. The large sample size allowed the study to use the AMOS software to test multiple hypotheses about the total sample, and subgroups within the sample. It was important to draw conclusions about different subgroups because previous research has suggested that certain populations are at greater risk based on certain factors. For example, students from low SES backgrounds are usually found to be more at-risk than their higher SES peers (Hammond et al., 2007; Rumberger, 2001). It is important to continue to confirm findings from previous research and to test any additional findings that can add to the literature. Furthermore, testing multiple relationships and subgroups helps researchers to better understand the data, and how they may apply to different groups of students. The large sample size also made it possible to use a bootstrapping transformation process to address normality violations.

Statistically, the use of structural equation modeling (SEM) to answer questions related to latent constructs, like student engagement, was a major strength of the study. SEM also made it possible to examine multiple relationships using regression weights and means without having to run a large number of separate analyses. Model building in AMOS also helped to further conceptualize and understand the relationships between variables. The models for each research question provided a nice visual representation of the strengths and directions for each variable relationship or factor loading.

AMOS accounted for the issues of data nonnormality by using bootstrapping. The bootstrapping procedure created 500 additional randomized data points that created a sample in order to meet normality assumptions. This transformation improved parameter and standard error estimates. This allowed analyses to yield more accurate conclusions about the relationships between variables within the data sets.

Another strength of the study is the potential for outcomes to shape school policy. The current study was completed to better understand the identification of at-risk students using EWIs, the benefit of at-risk programs in terms of student outcomes, and mainly to better understand the protective role of student engagement. These three questions are important questions for the schools and school districts to be asking to better aid understanding. The relationship between these constructs are important in order to guide interventions and support students in being more on-track for graduation. The study results add to the growing body of dropout prevention and intervention research.

The use of the Student Engagement Instrument (SEI) to measure student engagement is also a strength of the study. The SEI is a validated self-report measure of cognitive and psychological engagement (Appleton et al., 2006) that has been widely used in the field. Previous research validating this measure and factor analyses that identified factors that loaded onto the latent constructs of cognitive and psychological engagement permitted more fine-tuned analyses of results.

There also are some study limitations that are important to consider. First, the study relied heavily on student self-report, which can be considered both a strength and a weakness. Research does support the use of student self-report of cognitive and psychological student engagement as the most accurate way to measure the construct (Appleton et al., 2006). There are potential validity issues with self-report measures, however, in that students may not be truthful in their reporting and may under report, over report, or report how they believe they should report (Barker, Pistrang, & Elliot, 2002).

Another limitation was that the first data collection for 9th- and 10th-grade students

did not take place in October as planned. Since the first data collection was delayed until January, this did not provide enough time between data collection points to assess change in student engagement over the course of the school year. An additional data collection of self-reported student engagement was needed in order to have enough data points to conduct a latent growth curve analysis in AMOS. Instead of the originally proposed growth curve analysis, a comparison of means was conducted to examine differences between 9th- and 10th-grade students. The comparisons of 9th- and 10th-graders on SEI and EWI variables could be viewed as a cross-sectional comparison. As such it is difficult to draw conclusions about the impact of the Link Crew program based solely on comparing these two groups of students because there potentially could be other factors influencing any differences in outcomes other than participation in the Link Crew program. For this reason, any conclusions drawn about the effectiveness of the Link Crew transition program need to take into consideration these study limitations.

The fact that data were collected over 1 academic school year is also a limitation. In order to better draw conclusions about long-term outcomes and protective benefits of cognitive and psychological student engagement, it would be important to track students throughout high school and ideally, throughout their entire school experience. The 1-year time frame also made it difficult to assess how attrition potentially impacted student outcomes. A longitudinal design was not feasible for the current study due to time restrictions, so conclusions need to be drawn from a 1-year snapshot.

Another limitation worth noting is the study was conducted solely within one high school, which limits the external validity of the results. The conclusions drawn from this study would be strengthened by similar data from additional high school settings with

both similar and different populations of students and a variety of at-risk and prevention programs. While data from additional school settings are not necessary to draw initial conclusions, they are necessary in order to generalize the findings.

Furthermore, there was some subjectivity in teachers documenting ODRs. There could be differences in teacher reporting based on a number of different factors from the type of classes taught to discipline tolerance level. Some teachers may also be better at documenting ODRs than other teachers. These factors could have potentially impacted the results, and therefore, should be considered as a possible limitation of the study.

Implications for Future Research and Practice

The conclusions from this study indicate that student engagement potentially acts as a protective factor for at-risk students. This is not a new finding, as there is a body of research that suggests student engagement is an important aspect of school success for all students (Finn & Rock, 1997). This study's findings further support that student engagement is an important variable for schools to measure and track. Student self-reports of cognitive and psychological engagement can help school personnel to better understand which students are most at risk, and in need of interventions targeted toward increasing student engagement. This suggests that student engagement should be tracked and monitored similar to EWI outcome variables that are tracked on an ongoing basis in the EWS. Future research could focus on ways to incorporate cognitive and psychological engagement instruments, such as the SEI, into an EWS. Future research could also focus on how often student engagement needs to be tracked to be useful as an EWI as well as to be able to measure meaningful changes throughout the school year or throughout students' school experience. It is clear from the results from this study and

previous studies that student engagement continues to be an area in need of additional research, and the implications of improving student engagement need to be better understood in terms of improving school success for students and minimizing school dropout.

As previous research has suggested, student engagement is a construct that can be altered unlike other at-risk factors such as SES, family structure, and parental education level (Appleton, Christenson, Kim, & Reschly, 2006; Fredricks, Blumenfeld, & Paris, 2004). Previous research on high school dropout has focused heavily on potential risk factors and poor outcomes of high school dropouts, and now is beginning to shift to concentrating more on avenues for prevention and intervention. This shift in research focus is impacting policy, which in turn is having an impact on the number of students who dropout of high school, which continues to decrease. This shift needs to continue to strengthen intervention and prevention research and shape policy in a positive way. Furthermore, Check and Connect and other student engagement-based programs need to continue to be implemented and researched within the school setting (Christenson, Stout, & Pohl, 2012).

Study results also suggested that there were differences in outcomes based on the program type with clear differences between prevention and at-risk intervention programs. The prevention programs of LIA and AVID showed stronger relationships between participation and better outcomes on both student engagement and EWI variables. Since these programs are showing stronger results, the school may consider expanding these programs. Future research may want to focus on the specific components of these programs that may directly impact students' cognitive and psychological

engagement. For example, mentorship is one component of both LIA and AVID that could benefit from additional research regarding its effectiveness. Adult mentorship has already been shown to be a strong component of the Check and Connect program (Christenson et al., 2012) and it is considered to be a research validated component of successful dropout intervention and prevention programs (Dynarski et al., 2008). Both the LIA and AVID programs utilize a classroom teacher whom students will have access to throughout high school who acts as their mentor for academic achievement and behavior, as well as helping students build feelings of community and belongingness.

Another implication of the current study is that students who are receiving at-risk services remained at-risk; these students were more likely to have poor outcomes on the EWI variables and lower student engagement. While it is important that students are benefiting from these at-risk intervention programs, it is possible that these types of programs need to be implemented much earlier in students' school experiences, such as middle school or even elementary school. Future research may incorporate a pre- and-post-test design to see if at-risk students are making improvements, even if they still remain more at-risk than other students or remain at-risk on certain indicators and not others. Researching the whether earlier implementation (middle school, elementary school) may have stronger impacts is also an area for additional research. Furthermore, a longitudinal design following students throughout their high school experience could help researchers better assess and control for student attrition.

Research on the impact of the Link Crew transition program in place at the target school needs to continue to be followed during the next academic year. The current study found mixed results; the 9th-grade students had higher levels of reported cognitive and

psychological engagement, but overall had poorer outcomes on two of the EWI variables compared to the 10th-grade class. School personnel involved in the Link Crew program reported that they plan to make needed changes to improve peer leader compliance in order to enhance the program. Outcomes for 9th-grade students should continue to be tracked in the coming school year, and students who are enrolling in the next academic year could be compared to the first 9th-grade class for possible differences in student engagement and EWI variables. Future research focusing on the potential benefits to Link Crew peer leaders is also an avenue that could be pursued both within these students' school careers, but also post-high school to determine whether their leadership skills are positively impacted.

Similar to most high schools, the target high school included many different types of students within the school environment, so it is not surprising that study results revealed group differences by grade, gender, SES, and race. The high school in the current study did a good job of providing a wide range of programs that target different student groups. Future research could also focus on high school programming, and creating a system to match appropriate services to meet the needs of all students.

The current study only focused on at-risk intervention and prevention programs and their impact on at-risk students. Additional studies can expand the literature in the field of extracurricular activities, and how they may impact student engagement and EWI outcomes for all students. Students shape their environment through the activities and peers they surround themselves with. Participation in extracurricular activities both school-based and nonschool-based help to shape their environment, and in turn can have an impact on their school engagement and outcomes. Previous research has generally

found positive results for participation (Feldman Farb & Matjasko, 2012); however, future research needs to further explore the relationship between participation in extracurricular activities and cognitive and psychological engagement.

The Student Engagement Instrument (SEI) should continue to be explored with different student samples. For example, in the current study there were differences in the impact of student engagement for students who participated in at-risk programs and students who participated in prevention programs. The instrument should be analyzed using exploratory and confirmatory factor analysis with different groups of students. This can help researchers and school personnel to better understand which types of engagement are more influential for different groups or if there are similarities among these groups and how they report student engagement.

The current study's findings continue to support student engagement as a protective factor for at-risk students. Student engagement continues to be a supported avenue for high school dropout prevention and intervention research. Future research should continue to explore different school variables and intervention/prevention programs, and their impact on student engagement, and the impact of student engagement on student outcomes.

APPENDIX A

STUDENT ENGAGEMENT INSTRUMENT

Student Engagement Instrument- Translated Spanish Version

Se le esta pidiendo que usted complete este cuestionario sobre sus experiencias mientras asistía a Jordan High School. Sus respuestas serán confidenciales: nadie en esta escuela verá sus respuestas individuales. Reportes de la informacion mostrarán solamente un resumen de respuestas estudiantiles. Sus honestas repuestas seran usadas para asistir a la escuela en ayudarle a usted y otros estudiantes.

Para la mayoría de las preguntas en el cuestionario, usted escogerá el nivel con el que está de acuerdo en cada declaracion, escogiendo "Muy de acuerdo", "De acuerdo", "En desacuerdo"o "Muy en desacuerdo".
Las últimas preguntas del cuestionario son diferentes, y requieren que usted escriba una respuesta. Si tiene algunas preguntas sobre cualquier pregunta, por favor hágaselo saber a la persona que le ha administrado este cuestionario.

Gracias por su tiempo y sus opiniones.

Seleccione uno: Muy En Desacuerdo (1), En Desacuerdo (2), De Acuerdo (3), Muy De Acuerdo

1. Mi familia /tutor(es) están presentes cuando yo los necesito.
2. Despues de terminar mis trabajo escolar, lo reviso para ver si está correcto.
3. Mis profesores están presentes cuando yo los necesito.
4. A otros estudiantes aquí les gusta como yo soy.
5. Los adultos en mi escuela escuchan a los estudiantes.
6. Los otros estudiantes en la escuela se preocupan por mi.
7. Los estudiantes en mi escuela están presentes cuando yo los necesito.
8. Mi educación me va a proporcionar muchas opurtonidades en el futuro.
9. La mayoría de lo que es importante saber se aprende en la escuela.
10. Las reglas de la escuela son justas.
11. Ir a la Universida después de la escuela secundaria es importante.
12. Cuando algo bueno en mi escuela ocurre, mi familia/tutor(es) quieren saberlo.
13. La mayoria de los maestros en mi escuela están interesados en mí como una persona, no solo como un estudiante.
14. Los estudiantes aquí respetan lo que yo digo.
15. Cuando yo completo mi trabajo escolar, repaso para ver si entiendo lo que estoy haciendo.
16. En general, mis profesores son abiertos y honestos conmigo.
17. Planeo continuar mi educación después de la escuela secundaria.
18. Aprenderé, pero solamente si el maestro me da un premio.
19. La escuela es importante para que yo pueda conseguir mis metas futuras.
20. Cuando tengo problemas en la escuela, mi familia/tutor(es) están dispuestos a ayudarme.
21. En general, los adultos en mi escuela tratan a los estudiantes justamente.
22. Me agrada hablar con los profesores aquí.

23. Me agrada hablar con los estudiantes aquí.
24. Tengo algunos amigos en la escuela.
25. Cuando tengo buenos resultados en la escuela es porque trabajo duro.
26. Los exámenes de mis asignaturas hacen un buen trabajo a la hora de medir lo que yo puedo hacer.
27. Me siento seguro en la escuela.
28. Siento que que mis opiniones son tomadas en cuenta en la escuela
29. Mi familia/tutor(es) quieren que yo continúe intentando cuando las cosas son difíciles en la escuela.
30. Tengo esperanza en mi futuro.
31. En mi escuela, los profesores se preocupan por los estudiantes.
32. Yo aprenderé, pero solamente si mi familia/tutor(es) me dan un premio.
33. Aprender es divertido porque mejoro en algo.
34. Lo que estoy aprendiendo en mis clases va a ser importante en mi futuro.
35. Las notas en mis clases hacen un buen trabajo a la hora de medir e indicar lo que soy capaz de hacer.
36. Siento que encajo en esta escuela.
37. Hay un adulto en esta escuela al que yo puedo acudir para encontrar apoyo y consejos si los necesito.

38. Mi género es: Hombre, Mujer

39. Mi raza/etnicidad es: Negro, Blanco, Asiático, Isleño del Pacífico, Hispano, Otro: _____

40. Mi grado en la escuela actualmente es: 9º, 10º, 11º, 12º

41. ¿A cuál de las siguientes escuelas fuiste? Escoge todas las escuelas donde estuviste: Albion, Butler, Draper Park (previamente Crescent View), Eastmont, Indian Hills, Midvale, Mount Jordan, Union, Otro: _____

APPENDIX B

STUDENT SURVEY

Student Survey

Please answer the following questions based on your current involvement in activities and programs:

1. Which of the following extracurricular school-based activities and/or school-based programs do you currently participate in? Please mark all the activities you are involved in.
    a. After school tutoring
    b. AVID (Advancement via Individual Determination)
    c. Math Lab
    d. LIA (Latinos in Action)
    e. Link Crew
    f. Reading Class
    g. Student clubs
        i. Art Club
        ii. Asian/Chinese Club
        iii. Croquet Club
        iv. Debate
        v. DECA (Distributive Education Clubs of America)
        vi. Drama
        vii. FBLA (Future Business Leaders of America)
        viii. FCCLA (Family Career and Community Leaders of America)
        ix. Film Club
        x. #Forgiven (Bible) Club
        xi. French Club
        xii. Gay Straight Alliance
        xiii. HOSA (Health Occupations Students of America)
        xiv. National Honor Society
        xv. PTSA (Parent Teacher Student Association)
        xvi. Skills USA
        xvii. Spanish Club
        xviii. TSA (Technology Student Association)
        xix. Young Democrats
        xx. Shakespeare Club
        xxi. Military Fitness
        xxii. Polynesian Club
    h. Sports
        i. JHS Baseball
        ii. JHS Basketball
        iii. JHS Cheerleading
        iv. JHS Cross Country
        v. JHS Dance Company
        vi. JHS Drill
        vii. JHS Football
        viii. JHS Golf
        ix. JHS Lacrosse
        x. JHS Mt. Biking

xi. JHS Soccer
xii. JHS Softball
xiii. JHS Swimming and Diving
xiv. JHS Tennis
xv. JHS Track and Field
xvi. JHS Volleyball
xvii. JHS Wrestling
xviii. JHS Ultimate Frisbee
xix. JHS Unified Soccer

i. Student government
j. Study Skills Class
k. Theatre/stage crew

2. How many hours do you typically spend <u>each week</u> in extracurricular school-based activities or programs during the school year?
    - 0 to .5 hours
    - .5 to 1 hour
    - 1 to 1.5 hours
    - 1.5 to 2 hours
    - 2 to 2.5 hours
    - 2.5 to 3 hours
    - 3 to 3.5 hours
    - 3.5 to 4 hours
    - 4 to 4.5 hours
    - 4.5 to 5 hours
    - 5 to 5.5 hours
    - 5.5 to 6 hours
    - 6 to 6.5 hours
    - 6.5 to 7 hours
    - 7 to 7.5 hours
    - 7.5 to 8 hours
    - 8 to 8.5 hours
    - 8.5 to 9 hours
    - 9 to 9.5 hours
    - 9.5 to 10 hours
    - 10 or more hours

3. Do you feel as if you have an adult who you could go to for guidance and support at school? Yes or no

4. Which of the following adults do you feel would provide you with guidance and support if needed?
    - Teacher
    - Counselor

- School Psychologist
- Principal
- Assistant Principal
- Coach
- Secretary
- Hall monitor
- Librarian
- Tutor
- Educational Technician
- IT Specialist
- Facilities Supervisor
- Other
- None

5. Do you feel as if you have a peer who you could go to for guidance and support at school? Yes or no

6. Which of the following peers at JHS would you go to for guidance and support? Mark all that apply.
   - Friend
   - Sibling (at JHS)
   - Link Crew Mentor
   - Other
   - None

7. I feel like I fit in at this school.
   - Strongly Disagree
   - Disagree
   - Agree
   - Strongly Agree

8. Is there anything you would like to say about your experience at High School so far?

Please answer the following questions:

Grade:

- 9
- 10
- 11
- 12

Gender:

- Male
- Female

Race/Ethnicity:

- Black
- White
- Asian
- Pacific Islander
- Hispanic
- Native American
- Other

Which of the following middle schools did you attend? Please mark all that apply.

- Mount Jordan
- Eastmont
- Midvale
- Draper Park (Previously named: Crescent View)
- Albion
- Butler
- Indian Hills
- Union
- Other

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